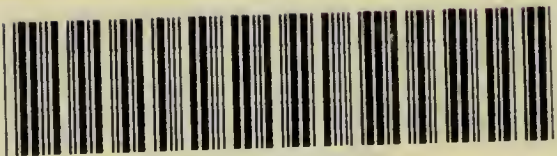


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THE FAMILY PHYSICIAN.



SIR JAMES PAGET. BART , F.R C S., F.R.S

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THE
FAMILY PHYSICIAN.

A Manual of Domestic Medicine,

BY PHYSICIANS AND SURGEONS OF THE PRINCIPAL
LONDON HOSPITALS.

TO WHICH IS ADDED

THE LADIES' PHYSICIAN.

SUBSCRIPTION EDITION.

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about right; for older children the milk may be increased to a half or two-thirds. Should even this fail, and the vomiting continue, one might try milk diluted with three or even four times its quantity of very thin arrowroot-water; or the child might be fed on cream and water only—one part of cream to three or four of water.

In the distressing morning vomiting of drunkards, arsenic will effect a cure with almost unfailing certainty, and will simultaneously improve the state of the stomach, and restore both appetite and digestion. The vomit in these cases is generally intensely bitter and sour, and of a green colour. It is usually accompanied by great straining and distress, and generally very little or nothing is ejected, and then it is called “dry vomiting.” The arsenic mixture (Pr. 40) may be employed, a tea-spoonful being taken four times a day, and the first dose half an hour before rising. Ipecacuanha will sometimes succeed in these cases, but arsenic acts far more certainly.

In that form of vomiting to which we have referred as coming on suddenly and without pain or nausea, arsenic employed as above will nearly always succeed; ipecacuanha will prove almost equally efficacious. Should there be constipation it will be as well to get the bowels thoroughly open by some mild aperient before commencing treatment.

The vomiting of cancer and ulcer of the stomach may yield to ipecacuanha, but sometimes this fails, and then arsenic may be employed. Sometimes the arsenic mixture (Pr. 40) succeeds when almost everything else has been employed in vain.

Alum in from six to ten grain doses, dissolved in half an ounce of water, sometimes checks obstinate vomiting occurring in consumptive patients, especially when it is brought on by the cough.

We have by no means exhausted our list of remedies for vomiting. In the treatment of this complaint bismuth has long enjoyed a deservedly high reputation. It is commonly given in combination with hydrocyanic acid; three drops of dilute hydrocyanic acid may be added to each dose of the bismuth mixture (Pr. 18). We have already insisted on the necessity of giving bismuth before meals and not after. Chloroform may be used for the same purpose, two or three drops being given in a wine-glassful of water. Creasote will sometimes succeed when other remedies have failed. The dose is three drops, which any chemist will make into a pill for you. It should be given either three times a day or every four hours, about half an hour before meals. Often enough ten drops of laudanum in a little water, or a hypodermic injection of morphia, will succeed better than anything. Sometimes an effervescing mixture will speedily allay the irritability of the stomach. In many cases simple soda-water, with or without brandy, answers admirably. A bag of ice or a blister applied to the pit of the stomach often succeeds, and small pieces of ice slowly swallowed are useful. The spinal ice-bag does good in sea-sickness (*see* SEASICKNESS), and might be used in other forms of vomiting, as, for example, the vomiting of pregnancy. Dry champagne is often retained when everything else is rejected. Wyeth's Soda Mint or Neutralising Tablets are useful.

But after all, the regulation of the diet, both as regards quantity and quality, is the great thing to be aimed at. In illustration of this fact we cannot do better than quote a most striking and instructive case recorded by the celebrated Dr.

William Hunter. "Many years ago," he says, "a gentleman came to me from the eastern part of the city with his son, about eight or nine years old, to ask my advice for him. The complaint was great pain in the stomach, frequent and violent vomiting, great weakness, and wasting of flesh. I think I hardly ever saw a human creature more emaciated or with a look more expressive of being near the end of all the miseries of life. The disorder was of some months' standing, and from the beginning to that time had been daily growing more desperate. He was at school when first taken ill, and concealed his disorder for some time; but growing much worse he was compelled to complain, and was brought home to be more carefully attended. From his sickly look, his total loss of appetite, besides what he said of the pain which he suffered, but especially from his vomiting up almost everything which he swallowed, it was evident that his disorder was very serious.

"Three of the most eminent physicians of the time attended him in succession, and tried a variety of medicines without the least good. They had all, as the father told me, after sufficient trial, given the patient up, having nothing further to propose. The last prescription was a pill of solid opium, for in the fluid state, though at first the opiate had stayed some time upon his stomach, and brought a temporary relief, it failed at length, and, like food, drink, and every medicine which had been given, was presently brought up again by vomiting. The opiate *pill* was therefore given in hopes that it would elude the expulsive efforts of the stomach. It did so for a time, but after a little use, *that* likewise brought on vomiting. Then it was that his physician was consulted for the last time, who said that he had nothing further to propose.

"Though at first the boy professed that he could assign no cause for his complaint, being strictly interrogated by his father if he had ever swallowed anything that could hurt his stomach, or received any injury by a blow or otherwise, he confessed that the usher in the school had grasped him by the waistcoat at the pit of the stomach, in a peevish fit, and shaken him rudely, for not having come up to the usher's expectation in a school exercise; that, though it was not very painful at the time, the disorder came on soon after. This account disposed the father to suspect that the rude grasp and shake had hurt the stomach. With that idea he brought him to me, as an anatomist, that an accurate examination might, if possible, discover the cause or nature of the disorder.

"He was stripped before the fire, and examined with attention in various situations and postures, but no fulness, hardness, or tumour whatever could be discovered; on the contrary, he appeared everywhere like a skeleton covered with a mere skin, and the abdomen was as flat, or rather as much drawn inwards, as if it had not contained half the usual quantity of bowels.

"Having received all the information I could expect, and reflected some little time upon the case, I wished to speak with the father in another room, and, to give my patient some employment as well as refreshment, asked him to take a little milk in the meantime. But his father begged that taking anything into his stomach might be put off till he got home, because he was certain that it would make him sick. 'Just before we set out,' said he, 'I gave him a little milk, but

he was sick and brought it all up in the coach, before we had got many paces from the house.'

"In the adjacent room I said to the father, 'This case, sir, appears to me so desperate that I could not tell you my thoughts before your son. I think it most probable, no doubt, that he will sink under it; I believe that no human sagacity or experience could pretend to ascertain the cause of his complaint, and without supposing a particular or specific cause, there is hardly anything to be *aimed at* in the way of a cure. Yet, dreadful as this language must be to your ear, I think you are not to be without hope. As we do not know the cause, it may happen to be of a temporary nature, and may of itself take a favourable turn; we see such wonderful changes every day in cases that appear the most desperate, and especially in young people. In them the resources of nature are astonishing.'

"Then he asked me if I could communicate any rules or directions for giving him a better chance of getting that cure from nature which he saw he must despair of from art.

"I told him that there were two things which I would recommend. The first was not so important, indeed, yet I thought it might be useful, and certainly could do no harm. It was to have his son well rubbed for half an hour together with warm oil and a warm hand, before a fire, over and all round his stomach, every morning and evening. The oil, perhaps, would do little more than make the friction harmless, as well as easy, and the friction would both soothe pain, and be a healthful exercise to a weak body.

"The second thing I had to propose I imagined to be of the utmost consequence. It was something which I had particularly attended to in the disorders of the stomach, especially vomitings. It was carefully to avoid offending a very weak stomach, either with the quantity or quality, of what is taken down, and yet to get enough retained for supporting life. 'I need not tell you, sir,' said I, 'that your son cannot live long without taking *some* nourishment; he must be supported to allow of any chance in his favour. You think that for some time he has kept nothing of what he swallowed, but a small part must have remained, else he could not have lived till now. Do you not think, then, that it would have been better for him if he had only taken the very small quantity which remained with him, and was converted to nourishment? It would have answered the end of supporting life as well, and perhaps have saved him such constant distress of being sick, and of vomiting. The nourishment which he takes should not only be in very small quantity at a time, but in quality the most inoffensive to a weak stomach that can be found. Milk is that kind of nourishment; it is what Providence has contrived for supporting animals in the most tender stage of life. Take your son home, and as soon as he has rested a little, give him *one* spoonful of milk; if he keeps it some time without sickness or vomiting, repeat the meal, and so on. If he vomits it, after a little rest try him with a small quantity, viz., with a dessert or even a tea-spoonful. If he can but bear the smallest quantity you will be sure of being able to give him nourishment. Let it be the sole business of one person to feed him. If you succeed in the beginning, persevere with great caution, and proceed very gradually to a

greater quantity, and to other fluid food, especially to what his own fancy may invite him, such as smooth gruel or panada, milk boiled with a little flour of wheat or rice, thin chocolate and milk, any broth without fat or with a little jelly or rice or barley in it, &c. &c.' We then went in to our patient again, and that he might be encouraged with hope and act his part with resolution, I repeated the directions with an air of being confident of success. The plan was simple, and perfectly understood. They left me. I heard nothing of the case till, I believe, between two and three months after. His father came to me with a most joyful countenance, and with kind expressions of gratitude told me that the plan had been pursued with scrupulous exactness, and with astonishing success; that his son had never vomited since I had seen him; that he was daily gaining flesh, and strength, and colour, and spirits, and now grew very importunate to have more substantial food. I recommended a change to be made by degrees. He recovered completely, and many years ago he was a healthy and very strong young man."

WARTS.

Warts are closely allied to corns. They occur most frequently on the hands or fingers of young people. They may be met with either singly or in large numbers. They are occasionally hereditary, and in these cases they not uncommonly correspond in number and position with those existing in one of the parents. In the majority of cases, however, warts exhibit a considerable degree of capriciousness in their appearance, period of duration, and disappearance. From their frequent occurrence on the hands of those often engaged in the examination of dead bodies, it would seem probable that the poison of decomposing animal matter is, under certain circumstances, capable of favouring their growth.

It is a common belief that the blood from a wart is capable of producing other warts on people with whose skin it may happen to come in contact; but the evidence on this point is, to say the least, inconclusive. It is even doubtful whether the ordinary warts which occur on the hands can be inoculated.

The arsenic treatment, to which we referred when speaking of corns, is well adapted for warts. The top of the wart should either be sliced off with a sharp knife, cut off with a pair of scissors, or destroyed with a drop of some caustic, such as nitric acid. It is then to be painted with the arsenic solution two or three times a day. In a short time it undergoes a change, and appears to break up into a number of pieces. It may then be removed or turned out without the slightest pain or difficulty.

There are several other means of getting rid of warts. Their vitality is low, and they are usually readily destroyed by the application of a caustic or astringent. The strong acetic acid known as the "glacial" acetic acid is often used for this purpose. It should be applied with a glass rod until the wart is pretty well sodden with the acid. It may have to be applied more than once, and care should be taken to prevent it from coming in contact with the surrounding skin, or it may cause a blister. Small warts occurring in numbers may usually be got rid of certainly and painlessly by keeping them constantly moist with a lotion made by adding

two drachms of dilute nitric acid to a pint of water. Lunar caustic is sometimes used for warts, but its action is, as a rule, too superficial to be of much service.

When warts or warty growths occur on the nose, lips, or any part besides the hands, chromic acid may be used. The solution is made by dissolving a hundred grains of crystallised chromic acid in an ounce of water. The solution is best applied by the aid of a pointed glass rod, or when a large quantity is required by means of a small glass tube drawn to a point. Only so much should be applied as will saturate the diseased growth, and it should not be brought in contact with the surrounding tissues. Any superfluous acid is to be removed by a piece of blotting-paper or wet lint. The application usually produces only a little temporary smarting, unless indeed, the part is ulcerated, when the pain is more severe and of longer duration. After the application of the chromic acid, it is a good plan to dress the part with lint dipped in lead lotion, as it relieves the soreness and restrains the inflammation. Under the influence of this treatment the growth usually rapidly wastes, in some cases being thrown off altogether, and in others undergoing a partial though distinct diminution in size. In the majority of cases one application suffices, the cure being complete in from four to eight days. When, however, the warts are very large, repeated applications may be necessary.

The application of a few drops of tincture of steel daily for several days will often cure a wart. It is best adapted to those forms which are moist and secreting.

Thuja occidentalis, a product of the evergreen known as *arbor vitæ*, is a good remedy for warts. Each wart should be painted three or four times a day with the tincture of *thuja*, small doses being also given internally.

When warts are provided with a little stalk or peduncle, as they are sometimes, they may be removed by the application of an elastic ligature. A small elastic ring, or a thin india-rubber thread such as may be drawn out of an old brace, may be applied to the base of the growth so as to constrict it pretty tightly, though not painfully. The continuous constriction will, in a few days, cause the wart to dry up and fall off.

WASTING PALSY—PROGRESSIVE MUSCULAR ATROPHY.

This curious disorder has only been recognised as a distinct affection since the year 1853. It is essentially characterised by a wasting of the muscles, there being no diminution of intelligence or of the sensibility of any part of the body. It occurs most frequently in young adults, and in middle-aged individuals, but even children are sometimes attacked. Men are more liable to it than women, and this probably depends on the greater and more sustained muscular exertion which men's occupations demand, and on their more frequent exposure to cold and wet. The influence of consanguinity in the production of this complaint is often well marked. In many instances the subjects of wasting palsy have been persons of good physical development, and not unfrequently they have been remarkable for their strength and activity. In the majority of cases the immediate cause of the disease is either excessive muscular exertion or exposure to cold. Many patients have attributed the onset of their symptoms to wearing damp apparel, to the immersion of the

limbs in cold water, to standing or sitting in a draught when hot, or to exposure to inclement weather. Particular sets of muscles which are of necessity in long continued action in persons following certain mechanical trades, as, for example, masons, milliners, shoemakers, and smiths, are those which are most frequently involved, and in these cases the wasting may be permanently limited to these parts. It has occasionally happened that the disease has followed a severe blow on the back, or some injury to the spine. Thus in the case of a boy of fifteen wasting of the muscles of the trunk and upper limbs followed a playful blow with the fist of one of his companions between the shoulders. In another instance the first symptoms of wasting of the muscles of the ball of the thumb occurred six months after the fall of a bale of cotton cloth on the nape of the neck. A curious case is recorded of a gentleman aged fifty-four, who suffered what he considered a slight injury. In jumping across a flower-bed for a wager, he came down heavily on his heels, and then fell backwards on his head. He was stunned for a time, but gradually recovered, and after some days' confinement to his bed appeared to be quite well again. It was, however, soon perceived that a great change had taken place in his habits. Having been extremely fond of manly sports and exercises—rowing, cricketing, riding, and the like—he discontinued to take part in any of these, although he continued to go every autumn to the Scotch moors for the purpose of shooting grouse. Five years after the accident, whilst engaged in the last-named sport, he perceived that his right leg had lost a part of its usual strength, and from that time the ordinary symptoms of wasting palsy developed themselves.

The symptoms generally come on very gradually. The tailor finds that he cannot hold his needle, the shoemaker cannot thrust his awl, the mason fails to wield his hammer, the gentleman experiences a difficulty in writing, in taking out his pocket-handkerchief, or putting on his hat. Some such incident directs attention to the affected limb, which is then discovered to be wasted and shrunken. In most cases the change begins in the upper limbs, most frequently of all in the hand, in the ball of the thumb especially, and in the ball of the right much oftener than in that of the left thumb. Next to those of the hand, the muscles of the shoulders are apt to be the earliest affected; sometimes those of the neck and face; less often some of the muscles of the lower limbs are the first to suffer. There seems to be a kind of caprice as regards the starting-point, but the muscles of which we have just been speaking are those which are ordinarily most employed by working men—a fact in favour of the theory that the disorder is sometimes the result of over-work. As the disease progresses the natural rounded contour of the limbs is replaced by an unsightly flattening, the bones stand out with unnatural prominence, giving the member the appearance of a skeleton clothed in skin. This may be carried to such an extent that the hand looks more like a claw than anything else. When the shoulder is affected the whole limb dangles powerlessly at the side. Sometimes, as we have seen, the disease extends to other parts of the body, and when the face is involved it is veiled, as it were, by an impenetrable mask, no emotion changes its unvarying aspect, and the expression is always solemn, stolid, and immovable. Sometimes the muscles of the mouth and cheeks waste away, and then the saliva dribbles out over the lips. The complaint sometimes induces a change in the voice,

which loses its register, and is finally reduced to a monotone. In extreme cases absolute immobility of the limbs or affected parts may result, but more commonly the various movements are still capable of being performed, though with greatly diminished force. Occasionally during the progress of the disease the wasted muscles exhibit curious flickering or tremulous movements, which can be seen going on under the skin. They are not sufficiently powerful to move the limb, and they commonly pass unnoticed by the patient himself. They afford a proof that the muscle is not yet dead. In some cases the progress of the disease is accompanied by a good deal of pain of a neuralgic character. In a few instances agonising pain has been a marked feature of the case. The general health remains unaffected, the intelligence is unimpaired, and the ordinary functions are usually performed with their accustomed regularity.

With the view of conveying a clearer idea of this terrible, though interesting malady, we give an abstract of one of the earliest recorded cases. The patient was a mountebank, aged thirty-two. From his own account it appears that one cold September night he slept on the muddy pavement of the streets, and in the morning on awaking found his right side quite benumbed. The warmth of a tavern fire soon restored both sensation and motion, but three weeks afterwards he noticed a weakness of the right hand, and from that time was no longer able to play the cornet-a-piston. For a year the weakness was confined to the muscles of the hand; he then passed another night in the cold and wet, and from that time felt a great weakness in his legs. This gradually progressed, and about a year later he was so weak that he had to come to the hospital. At the time of admission he could dress himself and walk, though with trouble, and could feed himself, and talk without difficulty. Speaking of his own condition, he said, "I am not ill, but my strength is gone, and my weakness increases daily. There is a feeling of great lassitude in my limbs, which torments me every hour, but especially on awaking from sleep." Still another year later and the unfortunate patient could not walk at all, neither had he the power to change his position without help. His food was given him, and he had to be put to bed just like a little child. His appetite was voracious, but he had the greatest difficulty in swallowing, and twice he was nearly choked by pieces of vegetable sticking in the throat. The only way to feed him was to place a spoon containing food right at the back of the throat; considerable efforts at swallowing on the spoon and its contents were then made, and the former being withdrawn, the food was in time swallowed. The saliva could not be got rid of, and constantly ran from the mouth. In trying to swallow liquids, the greater part was always returned. The power of articulation being lost, the wants were made known by nods, by the eyes, and by guttural, nasal sounds. The respiration was very incomplete, so that it seemed certain that the unhappy man, whose intelligence was unimpaired, was menaced every moment with suffocation. Finally he was seized with the then prevailing influenza, and being unable to expectorate the phlegm, was one morning found quite dead. This, it must be remembered, was an unusually severe case.

The course of this disease is essentially chronic, and its duration uncertain. It often happens that after destroying a group of muscles, its course is permanently

arrested. Even when progressive, its advance is seldom continuous, but is marked by repeated pauses and re-commencements, and the pauses may last for months or years at a time. Cases which can be traced to the effects of over-exercise usually do well.

WHITES.

Whites, or Leucorrhœa, a common complaint in women, may arise from a number of causes. A good injection may be made by dissolving a tea-spoonful of powdered alum in a pint of cold water. Gallic acid or tannic acid may be used in the same way. It is a good plan to combine the alum and tannic acid, dissolving a tea-spoonful of the former and half a tea-spoonful of the latter in the pint of water. Another good injection is a tea-spoonful of bicarbonate of potash or bicarbonate of soda in a pint of water. Common lime-water may be used for the same purpose undiluted. The injection should be used three times a day, or, at least, night and morning. It does not matter much what form of injecting apparatus is used, but one worked by squeezing an india-rubber ball is generally preferred, and it is essential that it should have a good long nozzle that can be introduced for some distance. The small glass syringes ordinarily sold are of comparatively little use. The patient should lie on her back, and raise the hips by means of pillows. The injection should be retained for four or five minutes, and the syringing should be performed thoroughly.

Pulsatilla is a good remedy for leucorrhœa, as for many other complaints peculiar to women. A table-spoonful of the mixture (Pr. 43) may be taken four times a day, and an injection used made by adding two tea-spoonfuls of tincture of pulsatilla to a pint of water. Hamamelis (Pr. 45) is also useful in this condition, and fifteen drops of Hazeline in a little water will often effect a speedy cure.

It must be remembered that leucorrhœa is not merely a local complaint, but depends on a relaxed condition of the system. It is often associated with anæmia (p. 92) and general debility (p. 207), and in these cases nothing does so much good as a course of quinine or iron. In the list of prescriptions we give several mixtures likely to prove of benefit; as, for example, Prs. 1, 2, 9, 11, and 63. When the ordinary preparations of iron disagree, there is nothing equal to Wyeth's Dealyed Iron, or Burrough's Beef and Iron Wine. Kepler's Malt Extract, and the malt extract and cod-liver oil are most useful. For diseases incidental to women a visit to Limpley Stoke often proves highly beneficial. Out-door exercise and a good nourishing diet are essential.

WORMS.

The round-worm is the commonest form from which man suffers. It is very like an earth-worm, for which in former times it was generally mistaken. It is usually some five or six inches long, and is lighter in colour and more pointed at the extremities than the earth-worm. Sometimes young ones are met with measuring not more than an inch or an inch and a half. These worms occur most frequently in young people. They live in the bowels, but sometimes make their way into the stomach, and are then usually quickly got rid of by vomiting. As a rule, there are only one or two, but occasionally large numbers are met with. A girl only eight years old

voided upwards of 200 in the course of a week, and the case is recorded of a soldier who passed 367 in six days. In another instance the patient got rid of 460 in a fortnight. This, however, is quite exceptional. The round-worm is met with

all the world over, but is more common in some countries than in others. In the Southern States of North America it attacks almost every one, young or old, and especially the negroes. In the West India Islands, Brazil, Finland, Greenland, in parts of Holland, Germany, and France, it is also very common. The rural population suffer more than the dwellers in towns, and the inhabitants of low and damp localities more than



Fig. 10.—ROUND-WORM.
(a) A mouth enlarged.

those who enjoy higher and drier abodes. The symptoms to which these worms give rise are, as a rule, not very decided; often enough there are no discoverable symptoms. When large numbers occur in a person of delicate constitution they may cause thirst, disturbed sleep, with grinding of the teeth, moroseness, with low spirits, pallid countenance, fetid breath, swelling of the belly, shrunken limbs, depressed appetite, slimy stools, itching of the nose, straining, and irritation of the back passage. It must be understood that the occurrence of such marked symptoms is exceptional.

The indications for treatment are to relieve the irritation of the bowels when present, to improve the general nutrition where that has suffered, but above all to expel the worms. The best remedy for getting rid of the worm is santonine, the active principle of wormseed. From two to four grains of the santonine, according to age, are to be mixed with a tea-spoonful or more of castor oil, and taken early in the morning before breakfast, repeating the dose two or three mornings successively. Every stool should be examined for worms. As soon as the intruders are got rid of, attention should be directed to the improvement of the general health. Iron (Prs. 3 and 4), quinine (Pr. 9), and cod-liver oil are likely to prove of advantage. Parrish's Chemical Food is useful. Plenty of out-door exercise, with, if possible, change of air, is likely to do good.

We cannot speak very confidently of the prevention of round-worm, because we are not certain how it enters our bodies. Probably, however, the careful cooking of all our food would prove a good safeguard, even in those countries and districts where the pest most abounds.

Tape-worm occurs most frequently where much pigs' flesh is consumed, and individuals who do not eat this meat are peculiarly exempt from the complaint. It is frequently observed among those who in their occupations are in the habit of putting knives used for cutting raw meat into their mouths; also among those who indulge in raw or very under-done meat. There can be no doubt that in this country tape-worm is often communicated by eating raw or imperfectly cooked beef. We need not enter into any detailed description of the tape-worm, for it is not likely to be mistaken for any other kind. It may vary in length from a yard to twenty feet. The head is at the part that tapers to a point. Usually small pieces or joints an inch or so in length are passed in the motions.

There can be no question that a large proportion of persons infested with tape-worm are unconscious of any departure from the state of perfect health, but there is as little doubt that in some instances functional derangements occur which are referable to the irritation it produces. Such are various uncomfortable sensations in the abdomen; pains resembling colic, sometimes felt when the stomach is empty, at others after certain articles of food; variable appetite, now excessive, now failing entirely; slight diarrhoea or constipation, and so on. Sometimes there is a constant craving for food, debility, irritability of the bladder, giddiness, noises in the ears, attacks of faintness, restlessness, wasting, and itching at the nose and back passage. This somewhat grave list of symptoms really contains nothing that is at all characteristic, and the only positive proof of the existence of the worm is the passage of the joints.

We will now consider the different remedies that may be employed for the expulsion of the worm.

The male shield-fern (*Aspidium felix mas*) is perhaps the oldest and most widely-known vermifuge. The patient must eat a very light tea, but no supper, and just before bedtime should swallow two table-spoonfuls of castor oil. On the following morning after the oil has acted he is to take either Pr. 35 or a tea-spoonful of the liquid extract of male shield-fern in a little milk. No food is to be taken until the bowels have freely acted, when the worm is usually expelled. The head should be carefully looked for.

The bark of the pomegranate root (*Punica granatum*) is also an ancient and extensively used remedy. Two ounces of the bruised bark, of the fresh root if possible, are to be macerated for twenty-four hours in two pints of water, to be then boiled down to a half, strained, and divided into three doses, one of which is to be taken at half-hourly intervals. The medicine is to be taken on an empty stomach, and must be repeated daily for four or five days. It is very desirable that the root from which the bark is obtained should be fresh.

Kousso—the flowers and tops of a plant known as *Brayera anthelmintica*—is a quick and good vermifuge, an especial favourite in Abyssinia, where tape-worm is very prevalent. The dose is half an ounce suspended in water, and it must be taken fasting. An objection to its use is that it is somewhat costly, but it might be tried in obstinate cases when other measures have failed.

It must be admitted that in some cases tape-worm proves extremely obstinate, but still persistence in treatment nearly always succeeds in getting rid of it at last.

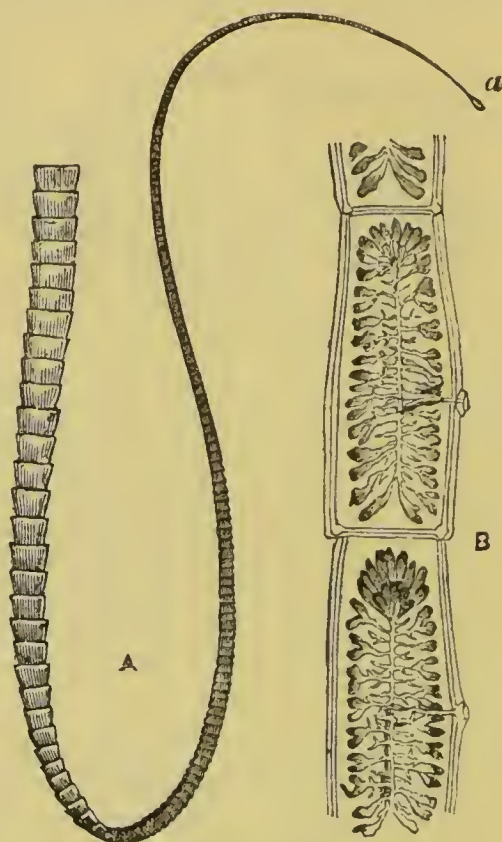


Fig. 11.—JOINTS OF TAPE-WORM.

A. Head (a), and a number of joints of body.
B. Microscopical structure of portions of three joints.

It is sometimes a good plan to give ten-drop doses of the liquid extract of male shield-fern three or four times a day for a week or more.

The best way of avoiding tape-worm is to make sure that your meat is always well done. Pork infested with "measles" should never be sold for food. Cooks and butchers should learn not to put their knives in their mouths, for it is a dangerous practice in more ways than one. Every one suffering from tape-worm—and for the matter of that any kind of worm—should disinfect every motion as soon as it is passed by pouring over it strong carbolic acid. This should be done not only for his own sake, but for the safety of others.

Thread-worms are of very common occurrence in children. They are little things looking just like a thread. They not unfrequently occur in immense numbers. They reside in quite the lower part of the bowel, from which circumstance they are often known as seat-worms. When only a few are present, they give rise to no inconvenience, and are usually only accidentally discovered in the stools. When they are numerous, they often cause itching or tickling of the back passage, which is sometimes very distressing, especially towards night.

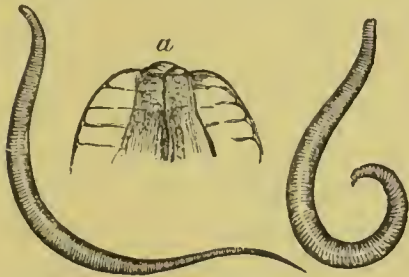


Fig. 12.—THREAD-WORMS.
(a) A mouth enlarged.

A capital mode of treatment is to inject into the back passage a pint of cold water containing a table-spoonful of tincture of steel. This may

be repeated once or twice a day until the worms have disappeared. An injection of infusion of quassia, or of salt and water, answers equally well. It is very desirable to pay attention to the general health, and steel wine, Parrish's Chemical Food, or cod-liver oil may be advantageously administered.

The patient should avoid touching the neighbourhood of the back passage, and should be scrupulously clean in person and clothing. The common Hindoo custom of washing after every act of defecation should be adopted. People suffering from worms should sleep alone. The food should be well cooked, and the hands should be thoroughly washed before and after every meal.

WRITERS' CRAMP.

The term writers' cramp is not a happy one, for the affection is by no means confined to those who wield the pen. It—or a practically identical disorder—may be found in the artist, and may prevent him from painting in oils; or it may occur in the violinist or the pianist, and hinder the musical performances of either; it may be met with in the seamstress, or the smith, or the milkmaid, and may limit or destroy their powers of work. In fact, analogous conditions occur in almost all avocations. Of late years it has been met with in those female stage-dancers who are accustomed to balance themselves on the tips of their toes.

It is usually a chronic and slowly-developed disease. A difficulty is experienced in executing a particular movement, such as that of writing, or playing on a musical

instrument, other movements of the same limb being perfectly easy of performance. The patient experiences at first a sense of stiffness or weariness after unusually prolonged exertion. The author or copyist finds that his pen no longer readily obeys the mandates of the will, it will not move as it ought to, and the writing is altered in character and looks unnatural. The pianist makes blunders in striking the chords, the fingers falling on the keys they were intended to avoid. The movements, which from years of constant practice had become almost involuntary—a kind of second nature—are now performed with effort and difficulty. The violinist can no longer control the movements of his left hand, and his fingers feel cramped and stiff. The poor needlewoman can no longer ply her needle, she pricks her fingers in her now bungling efforts, and the stitches are irregular and the work badly done. The *premiere danseuse* is seized with severe pain or cramp in the calves of her legs, and is temporarily obliged to desist from her efforts.

The disturbances of movement which render writing or similar acts difficult or impracticable are highly characteristic. Such disturbances are in the first instance slight, and are only perceived when the effort has been long continued, being then felt as a sensation of extreme weariness. By degrees the symptoms become more and more marked, and make their appearance very soon after the commencement of the exertion, and ultimately directly the pen is taken in the hand, or even when the hand is merely placed in the required position. At first the difficulty may be overcome by a vigorous effort, but soon no amount of determination will enable the sufferer to perform the desired act. Other things are done without trouble, but that combination of movements, the performance of which is necessary for the patient to obtain a livelihood, resists every effort. In a fully developed case of writers' cramp, the patient may be unable to write a dozen lines to save his life, and yet he may be able to paint, or play the pianoforte, or carve without the slightest difficulty. So long as he refrains from attempting to perform the special act, whatever it may be, he differs in no respect from a healthy man; immediately he attempts to follow his pursuit he is reduced to a condition of perfect helplessness. The moment he abandons his effort and desists from the attempt he is all right again, and feels nothing abnormal. After a time, prolonged effort to perform the desired act brings on distinct cramp, or a jerking or shaking of the part. The cramp movements, which are at first limited to the thumb and fingers, are sometimes temporarily avoided by the writer, who adopts some mechanical device which leaves them at rest. The positions assumed by the patient in order to facilitate his writing, and the means he employs to prevent the occurrence of the spasm, are often very curious. One man will rest only the wrist on the paper, raising the elbow in the air; another supports the arm on the elbow, and writes with the wrist raised and free; a third steadies the right hand with the left; whilst a fourth takes the pen between the index and middle finger, or sticks it into a cork which he seizes with his whole hand. As a rule, no sooner has the patient trained himself to write in some such awkward manner, than the muscles of the forearm become subject to spasm, and he is no better off than before. Sometimes the sufferer succeeds with infinite trouble in learning to write with his left hand, but no sooner have his efforts been crowned with success than that hand too becomes affected.

All his labour is thus thrown away, and his condition is, if anything, worse than before.

It is instructive to notice the changes that occur in the handwriting consequent on the disease, and a comparison may be instituted with letters formerly written in health ; it is often quite altered in character, because the patient has adopted a new method of using the pen when writing is possible. The strokes are coarse, imperfect, and unequal, and numerous irregularities and false strokes are to be observed ; in the highest degree of the affection, after a few scarcely legible words, the writing becomes a mass of irregular strokes and curves, whilst in other instances the letters are mere trembling, undulating, or zigzag strokes.

In some instances the attempt to perform the special act produces spasm, not only in the muscles brought into action, but also in other parts. For instance, the attempt to write may bring on spasm, not only in the affected hand, but also in the face or neck. As a rule, the general health in no way suffers, and the physical strength may be equal to or even beyond the average. A man may be the victim of writers' cramp, and yet be apparently a perfect model of health.

The affection we have been considering seldom occurs before the age of thirty. As a rule, men suffer more frequently than women, but pianoforte-players' cramp is more often met with in females. It is said, too, that the male dancer never suffers from dancers' cramp. The principal cause of the disease is usually supposed to be excessive writing, or playing, or what not ; but it must be remembered that it is of not unfrequent occurrence in those who have never over-exerted themselves in any way. It is most frequently observed in writers, secretaries, clerks, merchants, and *savants* ; but it occurs also in those who write but little, and who think they have done wonders if they have signed a score of business letters. The spasm is said occasionally to arise from exposure to cold, but this is very doubtful. It is obvious that inconvenient tables, a bad position in writing, tight sleeves, and especially hard and pointed pens must favour the development of the disease, since they all increase the demands made upon the muscles and nerves employed in writing. It is certain, however, that steel pens are not exclusively to blame for producing this form of spasm, since it was known before they were invented, and occurs in those who use only quill pens.

In cases where the symptoms have existed for only a short time, relief may be confidently expected, provided that rest can be taken. If the symptoms have existed for many months, or if rest be impossible, our opinion will be more or less unfavourable. Many who were seriously threatened with writers' cramp are now free from the malady, because they rested ; many who could not or did not rest have progressed from bad to worse.

The treatment consists primarily in attention to the removal of the cause. The discontinuance of all writing, playing, sewing, dancing, or whatever else may have led to the occurrence of the disease, or at least the limitation of such occupations to the greatest possible extent, is of vital importance. In recent and slight cases this alone will often effect a cure in a month or two. In severe cases absolute cessation from writing must positively be insisted on, and often enough nothing but a long rest, say of six months, or even a year, will effect a cure. Something may

perhaps be attempted before resorting to this serious measure in the way of assisting the patient by getting him to use good soft pens, and large cork pen-holders that may be grasped by the whole hand. We may mention incidentally that thick cork holders are a great convenience in writing even in health.

Electricity undoubtedly does good in some cases, but the exact form in which it should be employed—if at all—is a point that can be determined only by a medical consultation. Gymnastics, shampooing, tonics, and cold-water bathing may do good. In Vienna the following mode of treating dancers' cramp is adopted by the ballet-master: he either ties a handkerchief tightly above the ankle, or has the sufferer placed on a wooden cylinder, which she rolls backwards and forwards, whilst the whole weight of her body is supported on it. In this way the pain is relieved so that dancing can be resumed, but its return is not prevented.

A case is recorded of writers' cramp being cured by extract of physostigma. The patient was a clerk, aged thirty, intelligent and well educated. He had been ill three months, and was rapidly growing worse. Both hands were affected—the right most, though the left was first attacked. After writing a short time the fingers would be drawn up and cramped so that he could not use them, and his hand would start so that the pen would sometimes fly out of his fingers. His writing, which was formerly very good, had become so altered that his friends scarcely recognised it. The fingers of both hands trembled a great deal, just as they would in shaking palsy. He complained of severe numb and shooting pain in both hands, which he compared to neuralgia; it was most severe in the index-finger, and often kept him awake at night. The tip of the index-finger was very tender, and the pressure of the pen caused great pain. The hands perspired most profusely. He was ordered a thirtieth of a grain of extract of physostigma, to be taken every two hours in the form of a pill. He quickly improved. At the end of a fortnight his most distressing symptoms were relieved. The tenderness at the tips of the fingers was less, and he wrote better, for the effort caused less cramp and starting of the hand. In a few weeks the tremulousness, with the cramps and startings of his fingers and hands, left him, so that his writing gradually improved till it became as good as ever. In a little over two months he was cured. Till he took the physostigma he was daily growing worse, and from the time of beginning it he steadily and continuously improved.

Phosphorus (Prs. 53, 54) or hypophosphite of lime (Pr. 55) has been recommended in this complaint. Fellows' Compound Syrup of Hypophosphites—a teaspoonful three times a day in a little water—is most useful in many affections of the nervous system.

YELLOW FEVER. (See article on TYPHOID, TYPHUS, AND OTHER FEVERS, p. 529)

PRESCRIPTIONS.

IN dispensing, solids are weighed and liquids measured. Any of these prescriptions copied out and sent to a chemist would be made up without difficulty. Pills or powders, and small bottles if securely packed, can be conveniently sent by post. The quantities here given are for adults. In the case of children a proportionately smaller dose must be administered, according to age. Although the quantities indicated are those usually employed, it may be necessary in special instances or in certain diseases to depart from the ordinary custom. These cases are pointed out in the text. Should any difficulty be experienced in taking the pills they should be silvered or varnished.

1.—*Iron Mixture.*

Tincture of perchloride of iron, two drachms.
Chloric ether, one drachm.
Glycerine, one drachm.
Water, to eight ounces.
Mix. Two table-spoonfuls to be taken three times a day.

2.—*Iron and Quassia Mixture.*

Tincture of perchloride of iron, half an ounce.
Chloric ether, forty minims.
Infusion of quassia, to eight ounces.
Mix. Two table-spoonfuls to be taken three times a day.

3.—*Citrate of Iron Mixture.*

Citrate of iron and ammonia, two drachms.
Syrup of orange-peel, half an ounce.
Water, to eight ounces.
Mix. Two table-spoonfuls to be taken three times a day.

4.—*Iodide of Iron Mixture.*

Syrup of iodide of iron, half an ounce.
Syrup of phosphate of iron, two ounces.
Water, to eight ounces.
Mix. Two table-spoonfuls to be taken three times a day.

5.—*Aperient Iron Mixture.*

Sulphate of magnesia, one ounce.
Sulphate of iron, half a drachm.
Dilute sulphuric acid, one and a half drachms.
Peppermint water, to eight ounces.
Mix. Two table-spoonfuls three times a day.

6.—*Saline Iron Mixture.*

Citrate of potash, three drachms.
Tincture of perchloride of iron, three drachms.
Chloric ether, one drachm.
Water, to eight ounces.
Mix. Two table-spoonfuls to be taken three times a day.

7.—*Effervescent Iron Mixture.*

Citrate of iron and quinine, a drachm.
Sulphate of quinine, eight grains.
Citric acid, eighty grains.
Water, to eight ounces.
Mix. Two table-spoonfuls to be taken every four hours, with one table-spoonful of the following :—
Bicarbonate of soda, eighty grains.
Water, four ounces. Mix.

8.—*Iron and Digitalis Mixture.*

Tincture of perchloride of iron, one drachm.
Infusion of digitalis, half an ounce.
Dilute phosphoric acid, one drachm.
Water, to eight ounces.
Mix. Two table-spoonfuls to be taken three times a day.

9.—*Tonic Quinine Mixture.*

Sulphate of quinine, sixteen grains.
Dilute sulphuric acid, half a drachm.
Water, to eight ounces.
Mix. Two table-spoonfuls to be taken three times a day before meals.

10.—*Strong Quinine Mixture.*

Sulphate of quinine, forty grains.

Dilute sulphuric acid, half a drachm.

Water, to eight ounces.

Mix. Two table-spoonfuls or more every four hours.

11.—*Quinine and Iron Mixture.*

Sulphate of quinine, eight grains.

Sulphate of iron, sixteen grains.

Dilute sulphuric acid, eight minims.

Water, to eight ounces.

Dissolve and mix. Two table-spoonfuls three times a day.

12.—*Salicine Mixture.*

Salicine, four drachms.

Hot water, eight ounces.

Dissolve. When cold, an eighth part to be taken every two hours.

13.—*Ammonia and Bark Mixture.*

Carbonate of ammonia, forty grains.

Liquid extract of bark, one ounce.

Chloric ether, eighty minims.

Syrup of orange-peel, one ounce.

Decoction of bark, to eight ounces.

Mix. Two table-spoonfuls every four hours.

14.—*Gentian and Soda Mixture.*

Bicarbonate of soda, two drachms.

Dilute hydrocyanic acid, twenty-four minims.

Compound infusion of gentian, to eight ounces.

Mix. Two table-spoonfuls three times a day.

15.—*Gentian and Acid Mixture.*

Dilute hydrochloric acid, two drachms.

Dilute hydrocyanic acid, twenty-four minims.

Compound infusion of gentian, to eight ounces.

Mix. Two table-spoonfuls three times a day.

16.—*Gentian and Senna Mixture.*

Compound infusion of gentian, four ounces.

Infusion of senna, four ounces.

Mix. Two table-spoonfuls three times a day.

17.—*Carminative Mixture.*

Powdered rhubarb, forty grains.

Powdered ginger, forty grains.

Bicarbonate of soda, eighty grains.

Aromatic spirits of ammonia, two and a half drachms.

Cinnamon water, to eight ounces.

Mix. Two table-spoonfuls every four hours, or a single dose may be given.

18.—*Bismuth Mixture.*

Carbonate of bismuth, one and a half drachms.

Carbonate of magnesia, one and a half drachms.

Mucilage of tragacanth, one and a half ounces.

Water, to eight ounces.

Mix. Two table-spoonfuls every four hours. a quarter of an hour before meals.

19.—*Paregorie Mixture.*

Compound tincture of camphor, two drachms.

Ipecacuanha wine, twenty-four minims.

Tincture of henbane, one and a half drachms.

Water, to eight ounces.

Mix. Two table-spoonfuls every four hours.

20.—*Ipecacuanha and Squill Mixture.*

Ipecacuanha wine, two drachms.

Tincture of squills, one drachm.

Laudanum, half a drachm.

Treacle, half an ounce.

Water, to eight ounces.

Mix. Two table-spoonfuls every four hours.

21.—*Carbonate of Ammonia Mixture.*

Carbonate of ammonia, forty grains.

Chloric ether, two and a half drachms.

Mucilage of acacia, two ounces.

Water, to eight ounces.

Mix. Two table-spoonfuls every four hours.

22.—*Ammonia and Senega Mixture.*

Carbonate of ammonia, half a drachm.

Spirit of chloroform, one and a half drachms.

Infusion of senega, to eight ounces.

Mix. Two table-spoonfuls every four hours.

23.—*Creasote Mixture with Opium.*

Creasote, eight minims.

Tincture of opium, sixteen minims.

Spirit of chloroform, two drachms.

Glycerine, one ounce.

Water, to eight ounces.

Mix. Two table-spoonfuls every four hours.

24.—*House Mixture.*

Sulphate of magnesia, two ounces.

Powdered rhubarb, one drachm.

Jalap, one drachm.

Peppermint water, seven ounces.

Mix. A sixth part for a dose.

This "House Physic," or a similar preparation, is kept in the wards of nearly every hospital and infirmary.

25.—*Saline or Purgative White Mixture.*

Epsom salts, one and a half ounces.
 Carbonate of magnesia, one drachm.
 Peppermint water, to eight ounces.
 Mix. Dose, an eighth part or two table-spoonfuls.

26.—*Rochelle Draught.*

Rochelle salt, half an ounce.
 Syrup of ginger, a tea-spoonful.
 Lemon-juice, two table-spoonfuls.
 Water, four table-spoonfuls.
 Mix and drink.

27.—*Emetic Draught.*

Sulphate of zinc, twenty grains.
 Ipecacuanha wine, half an ounce.
 Water, one ounce.
 Mix. To be taken immediately. Its action may be aided by the free administration of warm water.

28.—*Diarrhoea Mixture.*

Dilute sulphuric acid, two drachms.
 Tincture of opium, one drachm.
 Spirit of chloroform, one and a half drachms.
 Water, to eight ounces.
 Mix. Two table-spoonfuls every four hours.

29.—*Astringent Mixture.*

Gallic acid, two drachms.
 Dilute sulphuric acid, two drachms.
 Water, to eight ounces.
 Mix. Two table-spoonfuls every four hours.

30.—*Acetate of Lead Mixture.*

Acetate of lead, forty grains.
 Dilute acetic acid, four drachms.
 Cinnamon water, to eight ounces.
 Mix. Two table-spoonfuls every four hours.

31.—*Bromide of Potassium Mixture.*

Bromide of potassium, two drachms.
 Syrup of orange-peel, one ounce.
 Water, to eight ounces.
 Mix. Two table-spoonfuls three times a day.

32.—*Iodide of Potassium Mixture.*

Iodide of potassium, half a drachm.
 Syrup of orange-peel, one ounce.
 Water, to eight ounces.
 Mix. Two table-spoonfuls three times a day.

33.—*Colchicum Mixture.*

Bicarbonate of soda, one drachm.
 Colchicum wine, three drachms.
 Water, to eight ounces.
 Mix. Two table-spoonfuls three times a day.

34.—*Sulphuric Acid Mixture.*

Epsom salts, four ounces.
 Dilute sulphuric acid, two drachms.
 Peppermint water, to eight ounces.
 Mix. Two table-spoonfuls three or four times a day.

35.—*Tape-worm Draught.*

Liquid extract of fern-root, one drachm.
 Syrup of ginger, one drachm.
 Water, to one ounce.
 To be taken fasting.

36.—*Sal Ammoniac Mixture.*

Sal ammoniac, eighty grains.
 Carbonate of ammonia, forty grains.
 Camphor water, to eight ounces.
 Mix. Two table-spoonfuls every four hours.

37.—*Sedative Draught.*

Bromide of potassium, twenty grains.
 Syrup of chloral, one drachm.
 Water, to one ounce.
 Mix. The draught to be taken at bed-time.

38.—*Aconite Mixture.**

Tincture of aconite, fifteen minims.
 Water, to two ounces.
 Mix. A tea-spoonful to be taken every ten minutes for the first hour, and subsequently hourly for six or eight hours, or longer if necessary.

39.—*Belladonna Mixture.**

Tincture of belladonna, fifteen minims.
 Water, to two ounces.
 Mix. A tea-spoonful to be taken every quarter of an hour for the first hour, and subsequently hourly.

40.—*Arsenic Mixture.**

Liquor arsenicalis, twelve minims.
 Water, to two ounces.
 Mix. A tea-spoonful every three or four hours

* Although many of these mixtures are almost tasteless, they are perfectly active, and the dose recommended should not be exceeded.

41.—*Gelsemium Mixture.*

Tincture of gelsemium, two drachms.

Water, to eight ounces.

Mix. Two table-spoonfuls every four hours.

To be taken cautiously, and the effects carefully watched. If dimness of vision or unsteadiness of gait ensue, the dose to be reduced by a third, or the intervals prolonged to six hours.

42.—*Arnica Mixture.*

Tincture of arnica, half a drachm.

Water, to four ounces.

Mix. A tea-spoonful every ten minutes for the first hour, and subsequently hourly.

43.—*Pulsatilla Mixture.*

Tincture of pulsatilla, half a drachm.

Water, to four ounces.

Mix. A tea-spoonful every ten minutes for the first hour, and subsequently hourly.

44.—*Nux Vomica Mixture.*

Tincture of nux vomica, fifteen minims.

Water, to two ounces.

Mix. A tea-spoonful every quarter of an hour for the first hour, and subsequently hourly.

45.—*Hamamelis Mixture.*

Tincture of hamamelis virginica, half a drachm.

Water, to four ounces.

Mix. A tea-spoonful every hour for the first six or eight hours, and subsequently every three or four hours.

46.—*Tartarated Antimony Mixture.**

Tartarated antimony, half a grain.

Water, six ounces.

Dissolve. A tea-spoonful every quarter of an hour for the first hour; afterwards hourly.

47.—*Cantharides Mixture.**

Tincture of cantharides, fifteen minims.

Water, to two ounces.

Mix. A tea-spoonful every two or three hours.

48.—*Corrosive Sublimate Mixture.**

Corrosive sublimate, half a grain.

Water, six ounces.

Mix. A tea-spoonful hourly.

49.—*Bryony Mixture.*

Tincture of bryony, half a drachm.

Water, to four ounces.

Mix. A tea-spoonful every hour.

* Although many of these mixtures are almost tasteless, they are perfectly active, and the dose recommended should not be exceeded.

50.—*Ipecacuanha Mixture.*

Ipecacuanha wine, one drachm.

Water, to eight ounces.

Mix. A tea-spoonful every hour.

51.—*Podophyllin Solution.*

Podophyllin (the resin), one grain.

Rectified spirit, two drachms.

Dissolve. Two or three drops on sugar every three hours.

52.—*Nitrite of Amyl Drops.*

Nitrite of amyl, eight minims.

Rectified spirit, half an ounce.

Mix. Three to five drops on sugar every three hours or oftener.

53.—*Phosphorus Solution.*

A saturated solution of phosphorus in ether.

Five drops in half a wine-glassful of water four times a day.

54.—*Phosphorus Capsules.*

Each containing one-thirtieth of a grain of phosphorus. One to be taken every three or four hours.

55.—*Hypophosphite of Lime Mixture.*

Hypophosphite of lime, one drachm.

Syrup, one ounce.

Water, to eight ounces.

Mix. One or two tea-spoonfuls three times a day.

56.—*Morphia Linctus.*

Solution of morphia, one and a half drachms.

Chloric ether, one and a half drachms.

Syrup of lemon, to four ounces.

A tea-spoonful occasionally when the cough is troublesome.

57.—*Squill and Opium Linctus.*

Oxymel of squill, ten drachms.

Compound tincture of camphor, five drachms.

Ipecacuanha wine, two and a half drachms.

Mucilage of acacia, to four ounces.

Mix. A tea-spoonful occasionally when the cough is troublesome.

58.—*Creasote Linctus.*

Creasote, four minims.

Glycerine, half an ounce.

Water, to four ounces.

Mix. A tea-spoonful when the cough is troublesome.

59.—*Confection of Sulphur and Senna.*

Confection of senna, ten drachms.

Sublimed sulphur, two drachms.

Mix. One or two tea-spoonfuls occasionally.

60.—*Aperient Pill.*

Compound colocynth pill, two grains.

Blue pill, one and a half grains.

Extract of henbane, one grain.

Powdered ipecacuanha, one third of a grain.

One pill to be taken at bed-time. Send a dozen.

61.—*Calomel Pill.*

Calomel, three grains.

Extract of henbane, a sufficient quantity.

Make a pill. To be taken at bed-time.

62.—*Blue Pill with Opium.*

Blue pill, twenty-four grains.

Opium, two grains.

Divide into twelve pills. One to be taken three times a day.

63.—*Sulphate of Iron Pills.*

Dried sulphate of iron, one drachm.

Syrup, twelve drops.

Make twelve pills. One to be taken three times a day.

64.—*Iron and Aloes Pills.*

Sulphate of iron, forty-eight grains.

Watery extract of aloes, twenty-four grains.

To make twenty-four pills. One to be taken three times a day for four days, then one twice a day for four days, and then one a day for another four days.

65.—*Dinner Pills.*

Extract of Barbadoes aloes, two grains.

Extract of nux vomica, half a grain.

Extract of gentian, one grain and a half.

Make a pill. One to be taken once or twice a day, half an hour before meals. Send a dozen.

66.—*Oxide of Zinc Pills.*

Oxide of zinc, two and a half grains.

Extract of liquorice, a sufficient quantity.

Make a pill. One or two every night at bed-time. Send a dozen.

67.—*Indian Hemp Pills.*

Extract of Indian hemp, half a grain.

Make a pill. One to be taken three times a day.

68.—*Sulphide of Calcium Pilules.*

Sulphide of calcium, two grains.

Sugar of milk, forty grains.

To make twenty pilules. One to be taken every two hours.

69.—*Lozenge Pills.*

Hydrochlorate of morphia, one thirty-sixth of a grain

Extract of liquorice, three grains.

Compound powder of tragacanth, five grains.

To make a lozenge pill. One to be placed in the mouth and allowed to dissolve slowly when the cough is troublesome.

70.—*Tar Pills.*

Tar (*Pix Liquida*), two grains.

Lycopodium, one grain.

Make a pill. One every four hours.

71.—*Sugar and Grey Powders.*

Grey powder, two grains.

Powdered sugar, one drachm.

Divide into twelve powders. One four times a day.

72.—*Grey Powder and Rhubarb.*

Grey powder, three grains.

Rhubarb in powder, six grains.

Make a powder. To be taken at bed-time.

73.—*Calomel and Sugar Powders.*

Calomel, two grains.

Sugar, one drachm.

Divide into twelve powders. One every three or four hours.

74.—*Digestive Powders.*

Bicarbonate of potash, ten grains.

Bicarbonate of soda, ten grains.

Ginger, five grains.

Calumba in powder, five grains.

Mix. One three times a day, half an hour before meals.

75.—*Bismuth and Charcoal Powders.*

Carbonate of bismuth, ten grains.

Wood charcoal, ten grains.

Bicarbonate of soda, five grains.

Mix. To be taken three times a day, half an hour before meals.

76.—*Iron Powders.*

Reduced iron, seventy-two grains.

White sugar, a drachm.

Mix, and divide into twelve powders. One three times a day.

77.—*Phosphate of Lime and Iron Powders.*

Phosphate of lime, one grain.

Phosphate of iron, one grain.

Saccharated carbonate of iron, one grain.

White sugar, five grains.

Mix. One three times a day. Send two dozen.

78.—*Sulphide of Calcium Powders.*

Sulphide of calcium, twenty-four grains.

Sugar of milk, half an ounce.

Thoroughly mix, and keep in a well-stoppered bottle. Dose, five grains, or as much as will cover a sixpence, every four hours.

79.—*Santonin Powders.*

Santonin in powder, three grains.

Sugar in powder, twelve grains.

Mix. One at bed-time for a child from two to ten years of age; for an adult, two.

80.—*Dusting Powder.*

Oxide of zinc, one part.

Powdered starch, two parts.

Mix. For external application only.

81.—*Alum Gargle.*

Alum, two and a half drachms.

Honey, an ounce.

Rose water, a pint.

Mix. To be used three or four times a day. About two table-spoonfuls to be taken in the mouth, and this should be repeated four times on each occasion.

82.—*Tannic Acid Gargle.*

Glycerine of tannic acid, two ounces.

Water, to a pint.

Mix. To be used three or four times a day. About two table-spoonfuls to be taken in the mouth, and this should be repeated four times on each occasion.

83.—*Borax Gargle.*

Borax, five drachms.

Water, a pint.

Mix. To be used three or four times a day. About two table-spoonfuls to be taken in the mouth, and this should be repeated four times on each occasion.

84.—*Cayenne Pepper Gargle.*

Tincture of capsicum, one hundred minims.

Dilute acetic acid, fifty minims.

Water, to half a pint.

Mix. To be used two or three times a day.

85.—*Turpentine and Ammonia Liniment.*

Liniment of turpentine, one and a half ounces.

Solution of ammonia, one and a half ounces.

Oil of cajeput, half a drachm.

Olive oil, to four ounces.

Mix. To be rubbed into the chest every night at bed-time.

86.—*Neuralgia Liniment.*

Aconite liniment, two parts.

Chloroform liniment, one part.

Mix and label "Poison—not to be taken." To be lightly painted over the painful part with a small brush. The application may be renewed several times in the course of the day. Care must be taken not to get it into cracks or cuts, and not to drop it into the eye.

87.—*Belladonna and Chloroform Liniment.*

Belladonna liniment, one part.

Chloroform liniment, two parts.

Mix. The liniment to be used once or twice a day.

88.—*Calomel Ointment.*

Calomel, one drachm.

Lard, one ounce. Mix.

89.—*Dilute White Precipitate Ointment.*

White precipitate, five grains.

Lard, one ounce. Mix.

90.—*Alkaline Lotion.*

Carbonate of soda, one tea-spoonful.

Water, one pint. Dissolve.

91.—*Sulphur Lotion.*

Flowers of sulphur, one tea-spoonful.

Glycerine, two table-spoonfuls.

Rose water, half a pint. Mix.

92.—*Evaporating Lotion.*

Rectified spirit, two and a half ounces.

Water, to half a pint. Mix.

93.—*Red Wash.*

Sulphate of zinc, twenty grains.

Compound tincture of lavender, two drachms.

Water, to half a pint. Mix.

94.—*Arnica Lotion.*

May be made by adding twenty drops of the tincture of arnica to half a cupful of water.

95.—*Hamamelis Lotion.*

Tincture of hamamelis, three drachms.
Water, to half a pint. Mix.

96.—*Hydrastis Lotion.*

Muriate of hydrastin, three grain.
Distilled water, three ounces. Dissolve.

97.—*Calendula Lotion.*

Add a tea-spoonful of tincture of calendula to half a cupful of water.

98.—*Compound Jalap and Bitartrate of Potash Powders.*

Compound jalap powder, twenty grains.
Bitartrate of potash, ten grains.
Mix to make a powder. One to be taken every alternate morning. Send three.

99.—*Effervescing Ammonia Mixture.*

Carbonate of ammonia, two drachms.
Water, eight ounces.
Two table-spoonfuls, with one table-spoonful of the following, to be taken every four hours, whilst effervescing :—
Citric acid, one hundred and thirty-six grains.
Water, four ounces. Mix.

100.—*Nitro-Glycerine Mixture.*

Nitro-glycerine solution, one per cent., a drachm.
Water, to eight ounces.
A tea-spoonful or more every four hours, with an extra dose at the onset of each attack.
Martindale's nitro-glycerine tablets answer the same purpose.

101.—*Chian Turpentine Pills.*

Chian turpentine, six grains.
Flowers of sulphur, four grains.
To be made into two pills to be taken every four hours.

102.—*Picrotoxine Pills.*

Picrotoxine, a sixtieth of a grain.
Sugar of milk, a sufficient quantity.
To be made by first rubbing up the picrotoxine with sugar of milk, and then adding a little glycerine, or tragacanth. One at bed-time, and another in the early morning if necessary.

103.—*Hazeline Mixture.*

Hazeline, a hundred and sixty minims.
Water, to eight ounces.
Mix. A table-spoonful every four hours.

104.—*Hydrochloric Acid Gargle.*

Dilute of hydrochloric acid, four drachms.
Glycerine, eight drachms.
Water, to a pint.
Mix. To be used three or four times a day.
About two table-spoonfuls to be taken into the mouth for each act of gargling, and this should be repeated four times on each occasion.

105.—*Inhalation of Friar's Balsam.*

Compound tincture of benzoin (Friar's balsam), an ounce.
A tea-spoonful in a pint of hot water (the right temperature is 140° Fahr.) for each inhalation. To be used for ten minutes three or four times a day. A common jug will do, but it is better to have a proper inhaler, such as Martindale's Portable Inhaler. Not more than six inspirations should be taken in the minute, and to avoid catching cold you should not go out for half an hour after each inhalation.

106.—*Iodine Inhalation.*

Tincture of iodine, an ounce.
Ten drops in a pint of hot water, to be used as an inhalation as directed above.

107.—*Inhalation of Oil of Juniper.*

English oil of juniper, twenty minims.
Light carbonate of magnesia, ten grains.
Water, to an ounce.
Mix. A tea-spoonful in a pint of hot water for an inhalation three or four times a day, as directed above.

108.—*Voice Lozenges.*

Benzoic acid, half a grain, made into a lozenge with red currant paste. Each lozenge is marked "B.A." One every four hours, and one a quarter of an hour before using the voice.

109.—*"M.A." Lozenges.*

Each contains two grains of chloride of ammonium with black currant paste. One or two may be taken every three hours or oftener. They are marked "M.A."

110.—*Tannic Acid Lozenges.*

Each contains a grain and a half of tannic acid with black currant paste. One or two may be taken every three hours or oftener. They are marked "T."

111.—*Rhatany Lozenges.*

Each contains three grains of extract of rhatany with red currant paste. One or two to be taken every three hours or oftener. They are marked "R."

112.—*Chlorate of Potash Lozenges.*

Those of the British Pharmacopœia are hard and not very nice. They are better made with black currant paste. Each contains three grains, and one or two should be taken occasionally. They are marked "P."

Wyeth's compressed tablets of chlorate of potash are excellent.

INDICATION OF DISEASE.

TEMPERATURE AND THE CLINICAL THERMOMETER.

It would be difficult to over-estimate the value of the information afforded by the clinical thermometer as a guide to the detection and treatment of disease. This little instrument is so simple in structure, and its use is so easily acquired, that it should be in the hands of every one who aspires, in however humble a degree, to relieve the sufferings of his fellow-creatures. Every mother should at once get a thermometer, and learn how to take the temperature of her children. A single observation may remove the most distressing anxiety as to the nature of a temporary indisposition, and show the absence of grounds for alarm. It will serve to indicate the existence of many maladies in their very earliest stages, and point out the necessity for treatment at the time when it is most likely to prove of avail. Elevation of temperature is in itself a distinct indication for the administration of certain remedies, the success of which depends upon their being given at once.

We have no hesitation in saying that the thermometer has done more than anything to render accurate our knowledge of the nature of disease, and to advance the art of treatment. It is now in daily, nay hourly, use in every hospital in London, and ranks in importance with the stethoscope. A doctor without his thermometer is like a sailor without his compass. No one should undertake any case of fever who has not at his disposal the means of obtaining a systematic record of the temperature. The man who attempts to treat a case of scarlet or typhoid fever without a knowledge of the temperature is doing justice neither to himself nor to his patient; he is simply groping in the dark. No amount of practical knowledge, and no amount of experience will enable a man to dispense with the information afforded by this little instrument. Of course the actual work of temperature-taking must be performed by those who have immediate charge of the patient, just as to them is entrusted the administration of the medicines. In many cases it is necessary that the temperature should be taken six times in the twenty-four hours, and it is obviously impossible that a doctor in active practice could do this himself. In the case of children and young people there is no one so fitted to perform this duty as their mother. Every mother should love, study, and trust the thermometer, the little magician, who like the little finger in the fairy tale, tells things that no one else could tell. With it she will give the doctor a trusty account of the condition of his patient. During his absence her hand will be his hand, her eye his eye, and more than that, seeing a sudden rise or fall of temperature when he is away, she foresees the peril that thermometry predicts several hours in advance, as the barometer does the storm, her mind becomes his mind, she hastens his return, and enables him to ward off a deadly exacerbation or collapse, truly herself saving the life of the patient.

The clinical thermometer does not differ essentially from an ordinary garden thermometer. It is, of course, smaller, and more accurate, and more delicate, and it is not supported in a frame. The figures are engraved on the glass itself, and it is usually graduated from 95° to 112° . Either the Fahrenheit or Centigrade scale may be used, but in this country the former is nearly always employed. The thermometer is what is called "self-registering," that is, you can take a temperature with it, lay it aside, and read it off at your leisure. At the top of the ordinary column of mercury there is a little piece which has been purposely detached to serve as an index. Before taking a temperature this is shaken down to about 96° , and then, when the mercury rises, it drives the index before it, and leaves it at the highest point it has reached. The object of the constriction is to prevent the index from being accidentally shaken down into the bulb and lost. It should be noted that it is the upper end of the index, *i.e.*, the end farthest from the bulb, which indicates the correct temperature. The mode of graduation is perfectly simple. Each of the big lines indicates a degree, although, as a matter of convenience, only every fifth degree is numbered. Each degree is divided by the smaller lines into fifths. For example, if, after making an observation, the upper end of the index stood at the point marked A in the figure, we should say the temperature was 97° , if it stood at B we should say it was 100° and $\frac{2}{5}$, and if at C 103° and $\frac{4}{5}$. As a matter of



Fig. 13.—THERMOMETER SCALE ENLARGED.

convenience we always write the temperature in figures, and express the fraction in decimals or tenths of a degree. Thus $\frac{2}{5}$ we write as $\cdot 4$, that is, $\frac{4}{10}$, and $\frac{4}{5}$ as $\cdot 8$, or $\frac{8}{10}$. Thus we write down our first temperature, that at A, as $97\cdot 0^{\circ}$, that at B as $100\cdot 4^{\circ}$, and that at C as $103\cdot 8^{\circ}$. Very often the letter F., indicating Fahrenheit, is put after the figure, as $101\cdot 6^{\circ}$ F.; but this is not necessary. We must now explain what the little arrow at $98\cdot 4^{\circ}$ means. This indicates the normal or natural temperature of the body, and if you take your own temperature you will find that that is about what it comes to. A little variation on one side or other of this point is of no importance, and is quite compatible with health.

Clinical thermometers can be bought at any instrument maker's, or your chemist will get you one. They are advertised every week in the *Lancet*, and can be sent by post, so there is never any difficulty in obtaining them. What you want is a "clinical self-registering thermometer." They are made of all sizes, but you will find the 4-inch the most convenient. They are supplied in a little metal or box-wood case, and with care they will last for almost any length of time, although they, of course, will not stand rough usage. The price varies at different shops from 7s. 6d. to half-a-guinea. Do not be persuaded to purchase ornamental cases or anything of that kind. What you want is a plain serviceable instrument, and the simpler the

better. In shaking down the index be careful not to shake it right down into the bulb, or you will never get it up again. Hold the thermometer firmly in your right hand, and then tap that hand against the other till you gradually shake the index down to well below normal. You will find that in course of time, with constant washing, the black will come off the figures, and they will be less easily read. You can easily restore that by rubbing them with a little heel-ball obtained from the cobbler's.

We must now explain the mode of taking the temperature. There are three regions in which the temperature may be conveniently taken—the bowel, the arm-pit, and under the tongue. In the case of children, in whom a knowledge of the temperature is always very important, the bowel is undoubtedly the most convenient, and is in every way preferable. The child is not frightened by seeing the instrument, and but little care is required to maintain it in position. The observation is quickly made, and its accuracy is not influenced by the restlessness of the patient. With adults the temperature is less frequently taken in the bowel, but in cases of high fever treated by cold baths, it must of necessity be taken in this region—for the arm-pits are under water, and the chattering of the teeth would prevent an observation from being made in the mouth. It may be asked is there no fear of the thermometer being broken in the bowel? The risk of accident is extremely small, supposing the slightest care to be taken. In the case of a child a little gentle restraint will obviate any danger, whilst an adult with a thermometer in his rectum readily appreciates the necessity for remaining quiet. For some years past the temperature of every patient in the children's wards of one of our best London hospitals has been uniformly taken in the bowel, six times a day, without the occurrence of any accident. In adults the temperature is ordinarily taken in the arm-pit or under the tongue. The temperature under the tongue is more readily and quickly ascertained, and particularly in the case of patients not confined to bed, is more reliable than when taken in the arm-pit. Under certain circumstances the temperature must be taken in the mouth, as when the patient is in a vapour bath or "wet-pack," and in some cases of rheumatic fever, where the slightest movement of the limbs causes the most exquisite pain. In other instances the temperature cannot be taken in the mouth, as when the patient is unable from constant cough or shortness of breath to retain the instrument long enough for a satisfactory reading to be obtained. In cases of St. Vitus's dance the force and frequency of the involuntary movements may not only put difficulties in the way of making an observation, but it may jeopardise the safety of the instrument. When from any reason the temperature cannot be taken in the mouth, recourse must be had to the arm-pit. The chief objections to arm-pit temperature are the length of time taken for the mercury to become stationary, and the difficulty experienced with people who are thin in approximating the arm sufficiently to the body. Arm-pit temperatures in cases of consumption are on this account usually untrustworthy.

The temperature of the extremities may be ascertained by holding the thermometer in the closed fist, or by inserting the bulb between the clefts of the fingers or toes. The latter method is especially useful in cases of supposed injury to the local nervous supply, as when one of the nerves of the limb has been accidentally injured.

In diseases of the nervous system it is occasionally necessary to ascertain the temperature of the surface of the body, a knowledge of the differential temperature of corresponding parts on opposite sides often proving in obscure cases an assistance in forming an opinion as to the nature of the complaint.

The following is the method of taking the temperature in the arm-pit:—

1. The index should be shaken down and the thermometer warmed by holding it for a few minutes in the hand.

2. The patient, if lying on the side, should be turned over, and the observation made in what was the dependent arm-pit.

3. The bulb of the instrument should be placed between the anterior and posterior folds of the arm-pit, and care should be taken that it is actually in contact with the skin all round, and not with the night-dress.

4. The patient should be made to lie in such a position that the fore-arm falls naturally across the chest, and by its weight converts the arm-pit into a closed cavity.

5. The thermometer should be retained in position for five minutes.

The object of taking the temperature in the dependent arm-pit is that it will have been less exposed, and its temperature will consequently more quickly indicate the true temperature of the body. It is a matter of indifference whether the temperature be taken in the right or left arm-pit. In cases where the patient is restless or delirious it may be necessary to hold the thermometer in position, and see that the arm is actually kept in contact with the body. Temperatures taken in the arm-pit in the cases of people not in bed are seldom trustworthy.

The following is the method of taking the temperature under the tongue:—

1. The index should be shaken down, and the thermometer warmed by holding it in the hand, as before directed.

2. The bulb of the thermometer should be placed as far back under the tongue as possible.

3. The mouth should be closed and respiration carried on entirely through the nose.

4. The thermometer should be kept in position for three minutes.

In taking temperatures in the mouth it is essential to ascertain that the bulb of the thermometer is actually under the tongue. It has been found experimentally that the temperature recorded by a thermometer placed between the inside of the cheek and the gums is considerably below that of the real temperature of the body, the actual difference depending on the temperature of the external air.

The following is the mode of taking the temperature in the bowel:—

1. If the patient is an adult he should lie on one side with his knees well drawn up; a child may be placed on his chest across his mother's knees or, what is better, the legs may be simply held up and slightly separated so as to expose the part.

2. The index having been shaken down in the usual way and the thermometer dipped in olive oil, the bulb should be passed for a distance of about two inches through the anus into the bowel. The whole of the thermometer is not to be introduced.

3. The contraction of the muscle of the orifice will probably retain it in position, but it is better to hold it in case it should be shot out by a sudden expulsive effort.

4. The observation should be made for three minutes. In the case of adults the temperature can be readily taken beneath the sheet, without any exposure. The introduction of the instrument causes no pain, unless the patient happen to be suffering from piles. It is quite possible, if thought desirable, to take the temperature in this way during sleep.

It will be seen that the time required for thermometrical observations varies with the different regions in which they are taken. Thus the time required for an observation in the bowel, or under the tongue, is three minutes, and in the arm-pit, previously covered up, five minutes.

It may not be superfluous to point out the necessity for washing the instrument after each observation. In the case of contagious diseases, the thermometer should always be disinfected in weak carbolic acid, or Condy's fluid, after being used. It is advisable to make it a rule to wash the instrument in the presence of the patient both before and after taking the temperature.

How often should the temperature be taken? This must depend on the nature and urgency of the case. In many chronic illnesses a morning and evening observation amply suffices. In acute cases, such as the different fevers, six observations in the twenty-four hours should, if possible, be made. In cases of very high temperature—hyperpyrexia—where the danger is imminent, it may be necessary to take the temperature every half-hour, or even oftener.

When should the temperature be taken? When only two observations are made in the day, one should be about 8 in the morning, and the other about the same hour in the evening. When the observations are made three times a day, the temperature may in addition be taken at 2 p.m. When six observations are made in the course of the twenty-four hours, the most convenient hours are 3, 7, and 11, night and day. Should there be reason to suspect that a rise of temperature occurs at other times, or should any special change be noticed in the condition of the patient, this would of course be an indication for taking the temperature. It is seldom necessary to wake the patient at night to take the temperature, the thermometer can easily be slipped into the arm-pit, or in the case of a child into the bowel, without causing any disturbance. The temperature should in the same case be always taken in the same region—for example, if you begin with the bowel you should go on with it.

It is very essential not only that the temperature should be carefully taken, but that it should be systematically recorded. It will not do to trust to your memory. You should have a form on which to put down the figures at once. We append an example (*see* CHART).

These forms can readily be drawn out with pen and ink, but for schools, where there is much sickness, and for those who visit the sick poor, it would be advisable to get them already printed. They are in constant use in all the metropolitan hospitals, and can be obtained for 1s. or 1s. 6d. a dozen where you purchased your thermometer. They serve not only as a record of the temperature, but also of the pulse and respiration. Under the heading of remarks you may enter the state of the bowels, or any other fact that may strike you as being of importance. Our example is taken from an actual case of rheumatic fever, although, of course, the name

Temperature taken (under the tongue).

Name.—REGINALD VERNON, Esq., Montague House, Wimbledon.

Illness.—Rheumatic Fever: taken ill on the 8th.

DATE.	HOOR.	TEMP.	PULSE.	RESP.	REMARKS.
1877.					
July 9th	11.30 a.m.	102.4	118	40	No medicine.
	11.30 p.m.	102.8	116	50	
	To take 30	grains of	salicine	every hour.	
,, 10th	11.30 a.m.	102.4	120	40	
	11.30 p.m.	99.4	94	44	
,, 11th	11.0 a.m.	100.4	104	46	
	11.30 p.m.	98.2	100	32	
	To take the	salicine every	alternate	hour.	
,, 12th	11.0 a.m.	98.0	—	—	
	11.0 p.m.	97.6	84	32	
,, 13th	11.30 a.m.	98.0	—	—	
	11.30 p.m.	97.2	80	26	
	Salicine	discontinued	—last dose	at 11 p.m.	
,, 14th	11.30 a.m.	98.2	—	—	
	11.30 p.m.	98.8	82	24	
,, 15th	11.30 a.m.	98.6	—	—	
	11.30 p.m.	98.4	78	24	
,, 16th	11.30 a.m.	98.2	—	—	
	11.0 p.m.	98.6	76	20	
,, 17th	11.0 a.m.	98.4	—	—	

of the patient is fictitious. It will be seen that the temperature was taken only twice a day, and that is hardly sufficient. The fact is, the patient was a bachelor, living in rooms, and had no skilled assistance in the shape of a trained nurse. He was unable to take the temperature himself, as the pain in the joints was very great, and the slightest movement increased it. In spite of the small number of observations, the temperature afforded valuable information as to his progress, and served to relieve his medical attendant of much anxiety.

Sometimes it is desirable to record the temperature on a chart. This graphic method is so commonly adopted for illustrating the variations in the height of the barometer that it must be familiar to most of our readers. A glance at the accompanying chart will serve to explain the system.

At the top you record the name, age, and the nature of the illness of the patient. Then in the first column, extending from side to side, you put the day of the month, and the initial of the day of the week above it if you like. Then in the next horizontal column you write the day of the illness, generally in Roman figures. For instance, in this case—which is the same as that referred to on the sheet—the patient was quite well on the 7th, on the 8th he felt hot and feverish, and had pains in his joints, and on the 9th he sent for his doctor. Here the 9th was clearly enough the second day of the illness. Sometimes, especially in typhoid fever, you may be unable to determine with accuracy the day of onset of the illness, and you may have to leave this line blank. In chronic cases, when the patient has been ill

Name—REGINALD VERNON, ESQ., Montague House, Wimbledon. Age—23. Illness—Rheumatic Fever.

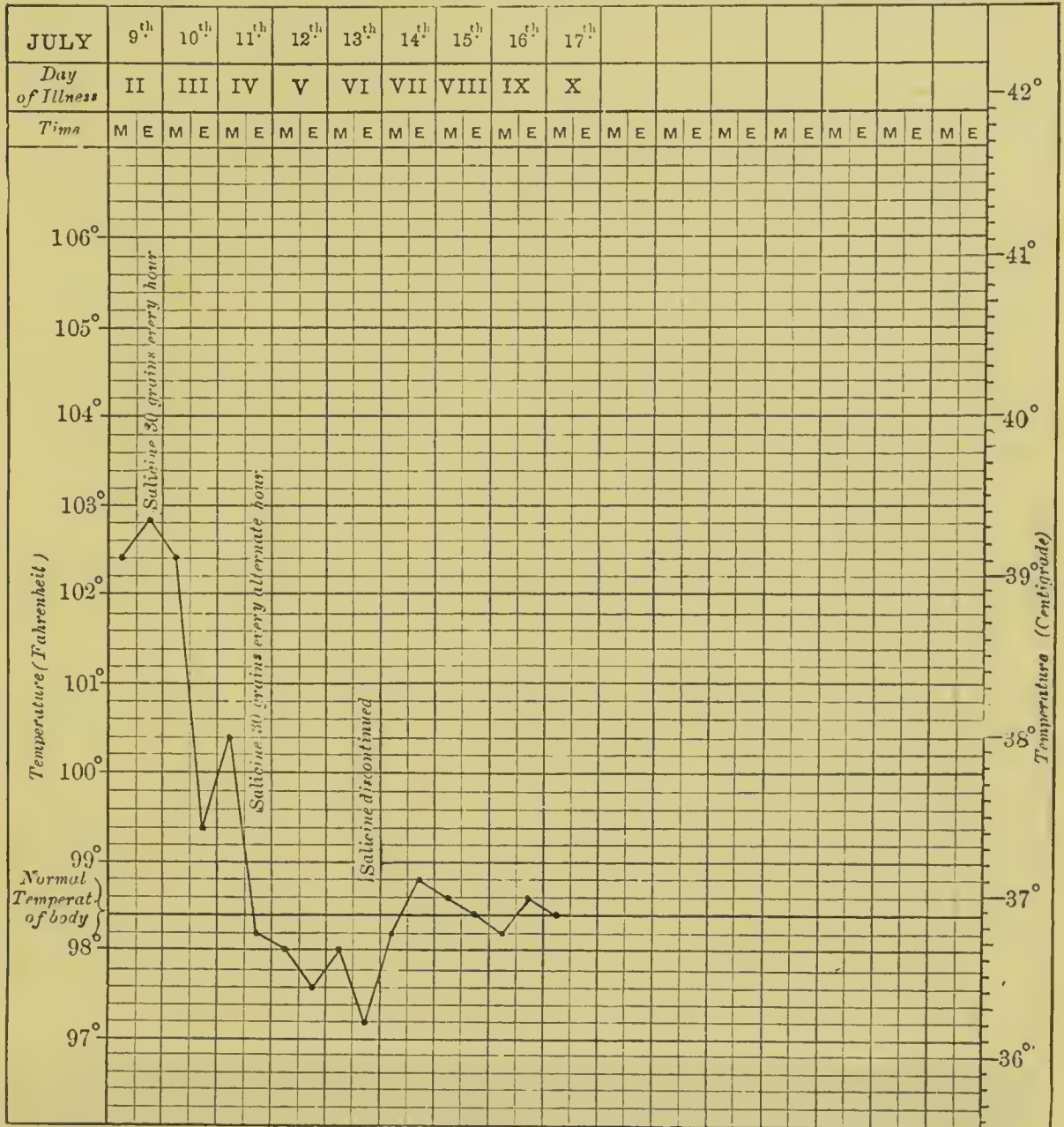


Fig. 14 —TEMPERATURE CHART.

for weeks and months, it is never necessary to fill it in. The big letters M and E in the next line mean morning and evening. This chart is intended to record only two temperatures a day, but when an observation is made oftener, say six times in the twenty-four hours, you draw a larger number of columns for the day, and put the hour, A.M. or P.M., at the top of each. The black lines running from side to side with the figures attached correspond to the scale of the thermometer. Thus a temperature of 100° Fahr. would be indicated by a dot placed on the line marked on your left with 100, in the morning or evening column as the case might be. The faint dotted lines between and parallel with these black lines indicate divisions of a degree, just as do the smaller marks on the thermometer scale. For example, the temperature of our patient on the morning of the 9th was 102° and two-fifths,

that is 102° and four-tenths, or 102.4° , so we put a dot on the second faint line above the 102. The space between each degree is divided into ten equal parts, but as a matter of convenience only five of the faint lines are drawn, so that each of them represent two-tenths of a degree. Thus the first faint line above 102° is 102.2° , the next is 102.4° , and so on, and the same with the other degrees. The thick black line opposite 98.4° Fahr. is the normal temperature of the body, and corresponds to the little arrow on the thermometer. The figures on your right hand, ranging from 36 to 42, are the corresponding figures on the Centigrade scale. You need not trouble about them unless you are abroad and can get nothing but a Centigrade thermometer, when you will find them useful.

All this looks a little bit complicated at first sight, but it is not so in reality. It is as easy as A B C when you just get over the first difficulty, and it is almost impossible for you to make any mistake. The object of joining the dots by lines is that you can see at a glance the course of the temperature. For instance, in this case salicine was given, and the fall in the temperature which it caused is very obvious. The drop on the third day of illness is entirely due to the treatment, and would not have occurred in the natural course of the disease. The fever was cut short by the salicine, for after the fourth day the temperature practically never rose above the normal, and all cause for anxiety was at an end.

As we have seen, the normal temperature of the body—the point at which the arrow is placed on our clinical thermometers—is 98.4° F.; but the temperature at different periods of the day, and under the diverse conditions to which we are exposed, may, and ordinarily does, range somewhat on either side of that point without indicating any departure from health. There is, in fact, a diurnal range of temperature. The temperature reaches its highest point about 9 a.m., and continues much the same during the chief part of the day; whilst in the evening it uniformly and gently falls, and remains at its lowest depression during several hours of the night; but subsequently, in the early morning hours, it again uniformly and quickly rises. This is well illustrated by the accompanying chart of the temperature of a healthy boy, taken at hourly or half-hourly intervals for a period of two days.



Ringer and Stuart.]

[Proceedings of the Royal Society, 1877.]

Fig. 15.—THE DIURNAL RANGE OF TEMPERATURE IN HEALTH.

This diurnal rise and fall constitutes the only great variation. In young people the evening fall usually begins between 5 and 7 p.m., but exceptions sometimes occur, for the evening fall may begin either before or after the time stated. The fall,

however, happens more frequently before this time than after. The morning rise usually begins between 3 and 7 a.m., and is completed by 9 a.m. After this hour the temperature usually remains at much the same height until the evening fall begins. The daily variation in old people is considerably less than that of young people; in fact, the variation in persons over forty is only half that of persons under twenty-five years. But the difference is not merely in the amount of depression, but in the manner of its occurrence. In young people there is in the evening a very rapid fall, and the minimum temperature of the day is quickly reached, often, indeed, in three or four hours. In persons over forty so rapid a fall rarely occurs; but the temperature usually declines very slowly, and as soon as the minimum is reached it again begins to rise, so that not only is the amount of the evening fall less in these older persons, but the period of the depression is also shorter, generally very much shorter. On some days, curiously enough, no diurnal variation occurs in persons over forty years of age. In middle-aged adults, apparently the diurnal fall does not observe any particular time; but occurs sometimes in the middle of the night, and at other times in the morning, about 9 a.m. It may be taken as a rule that the older the person the later in the day the diurnal fall begins; thus, in a child aged five it began between 2 and 3 p.m.; in two boys aged eleven, between 4 and 7 p.m.; in two men, aged fifty-five and sixty-eight, between 9 and 11 p.m. Respecting the cause of this diurnal rise and fall we know little. It is easy to theorise, but difficult to arrive at any definite conclusion, or to obtain trustworthy evidence on the subject. It has been clearly shown by keeping people in the dark that it is not due to the action of light. It has, moreover, been proved that it is not due either to food or exercise.

Food has little or no influence on the temperature of healthy people. When the morning rise of temperature has been delayed by long abstinence from food, breakfast, by restoring the tone of the system, will enable this to take place, but this is all that it can do. If you take your temperature just before a mid-day dinner, and just after, you will find that there is very little, if any, variation. To establish this point you would, of course, have to make the observation on several occasions. A cup of hot tea will temporarily raise the temperature taken under the tongue by a degree or more. Alcohol distinctly depresses the temperature. When you take a glass of spirits, you do not keep out the cold, but, on the contrary, let it in.

Exercise elevates the temperature slightly. Thus an observer took his temperature at 3.30 p.m., and found that it was 98.6° F. He then walked to the top of Highgate Hill, a distance of some five miles, and found that his temperature was 99° F.

It is greatly to be regretted that our knowledge of the course of the temperature in health is so meagre. Any one—man or woman—who would take his own temperature several times a day at definite hours for a period of six months, and would publish his results, would be conferring a great benefit on science. It would be especially important to work out fully the influence of food, exercise, &c., on the healthy temperature. Work of this kind is readily accepted and published by the Royal Society. As a model for work, Ogle “On the Diurnal Variations of the

Temperature of the Human Body," St. George's Hospital Reports, 1866, vol. i., may be consulted.

It has been stated that the temperature is slightly higher in women than in men, but it must be admitted that on this point we have no information that can for one moment be regarded as conclusive. Mental exertion, such as literary composition or reading a work of exciting interest, is said to cause a slight elevation of temperature, the mean of a number of observations made under these circumstances being slightly higher than the mean of an equal number made at the same period of the twenty-four hours, when the attention was not roused, as when reading an uninteresting book, or when engaged in the mechanical process of copying manuscript. During sleep, however, when it may be supposed that there is a total absence of mental exertion, there is no fall of temperature. The fall that takes place at night is due to the diurnal range of temperature, and occurs with equal regularity sleeping or waking.

The temperature of the body is, to a certain extent, influenced by the temperature of the external medium. The variations that occur in the temperature of the air are ordinarily too slight to affect it to any appreciable extent. In the Turkish bath, with the temperature at 130° F. or thereabouts, there is usually an elevation of 2° or 3° in the temperature of the body. In a hot-water bath the temperature may be raised from 1° to 4°, the amount of elevation being dependent on the temperature and duration of the bath. In baths of a moderate heat—101° to 102°—the temperature of the body rapidly assumes that of the surrounding medium, and there can be but little doubt that the same accordance would be observed at still higher temperatures, were it not for the impossibility of any one remaining in a very hot bath for more than a few minutes. Hot vapour baths are equally efficacious in raising the temperature, an elevation of from 2° to 3° being readily obtainable. The rapidity with which the temperature falls on removal from the bath is very remarkable, a degree being sometimes lost in less than five minutes. Cold baths exert a powerful influence in lowering not only the surface heat, but also the temperature of the interior of the body. It is possible by means of the cold bath to reduce the temperature to 87° F., but so great a depression as this occurs only when the water is very cold and the bath is continued for a considerable time—for from a quarter to half an hour. Sometimes the maximum depression is not obtained during the continuance of the bath, the temperature of the body falling for some time after.

Menstruation occurring normally in healthy young women usually produces no disturbance of the temperature, but occasionally there is, without any apparent cause, a slight elevation at these times. The uniform occurrence of a febrile condition at the monthly periods may be regarded as an indication of the existence of a morbid condition of the parts concerned in producing the menstrual flow.

It is by the thermometer alone that we can determine with accuracy the temperature of the body. The significance of abnormal temperature as an indication of disease has long been recognised. For more than 2,000 years it has been known that elevation of temperature is a pathognomonic symptom of fever, and thus fever and preternatural heat of the body have come to be regarded as synonymous



ENCEPHALON OF BRAIN.

- A. Brain (encephalon) as seen from the right side.
- B. Longitudinal median section of encephalon, showing inner surface of left half of Cerebrum, the Corpus Callosum, pituitary body, Pons Varolii, Medulla oblongata, and cerebellum, etc.

terms. Before the invention of the clinical thermometer it was customary to rely chiefly on the state of the pulse and the heat of the skin, as estimated by the hand, for the detection of fever. The hand is quite untrustworthy as a test or measure of temperature, and consequently of the existence of febrile disturbance. A dry skin may readily be mistaken by the hand for fever, whilst similarly a moist skin may mask the presence of elevation of temperature. The hand, even if sufficiently sensitive, could do no more than estimate the temperature of the surface of the body; the thermometer indicates the heat of the interior. A relationship, it is true, ordinarily exists between the pulse-rate and the temperature, but this is so prone to disturbance from trivial causes as to render it unreliable as an indication of the existence of fever. We will refer to this at greater length when speaking of the pulse.

The thermometer is of the utmost value as a guide to diagnosis. By its use we are enabled, by a single observation, to distinguish between diseases the symptoms of which are so similar that without its aid our skill would be baffled, and our treatment of necessity postponed. In the diagnosis of typhoid fever the thermometer is all-important. Hear what the Queen's physician says on this subject:—"There is a form of typhoid fever," he says, "with which we are all familiar, that has been termed latent typhoid fever—a form in which the patient is from the commencement to the termination of the disease able to walk about, and even to follow his ordinary occupations. This is a form of the disease in which the patient not very unfrequently dies from perforation of his bowel, or from intestinal hæmorrhage, even though, as is usual, the evidences of bowel irritation have been trifling. The diagnosis of this practically important variety of typhoid fever is often all but impossible without the use of the thermometer; with its aid it is comparatively, and it may be absolutely, easy. The thermometer, in this case, enables the practitioner not only to satisfy himself, but also to satisfy the patient and his friends that he is really ill, that he is the subject of fever, not merely out of sorts—poorly. Accuracy in our diagnosis in this class of cases is all-important, for by it we are led to avoid the treatment which some of the symptoms may seem to demand—treatment which perchance might lead, as it often has led, to a fatal result; while, by the ocular demonstration of the existence of the fever which we can give to the patient, we can induce him to take those hygienic precautions so important for his safe passage through the ailment. How often have we all known in times past a drastic purge—administered by the physician to remove the disordered secretions, and injudicious diet taken by the patient to remove the weakness—lead to death!"

In some cases it would be absolutely impossible to distinguish between pleurisy and mere muscular pain in the side without the thermometer; the importance of making the diagnosis is self-evident. A young man comes complaining of darting pain in the side which suddenly seized him a few days ago, and "catches" him whenever he gives a cough or takes a breath. His face wears an expression of illness, and his pulse is quick and feeble. He cannot sleep at night, and has, he says, quite gone off his appetite. He has had a little cough all the winter, but does not spit much. It is impossible to learn anything from an examination of his chest, for he is very tender, and the pain is so great that he cannot take a deep breath.

Is this pleurisy?—or only muscular pain; pleurodynia? The symptoms are readily explicable on either supposition. The pain is in itself sufficient to have caused the sleeplessness, and the want of sleep may have impaired the appetite and given rise to the other general symptoms. The cough may be nothing more than a common cold, and the condition of the pulse may be due to the pain, or may be the result of nervousness. How is the diagnosis to be made? By taking the temperature. If the patient is suffering from pleurisy the temperature will be 101° F. or more, and if from pleurodynia it will be normal.

Cases of hysteria are frequently met with, which so closely simulate other diseases that without the help of the thermometer a diagnosis would have to be postponed. The facilities which it affords for the detection of feigned disease are great. The thermometer will often indicate the occurrence of some complication in the course of a disease which might otherwise have passed unobserved until too late for treatment. It should not, however, be trusted too implicitly for this purpose, for serious complications may occur without any indication from the course of the temperature. The return of the temperature to the normal is an indication of the termination of the illness and the commencement of convalescence.

Many fevers have typical ranges of temperature, so that an inspection of the temperature sheet may, if the disease conform to its type, enable the physician, without ever seeing the patient, to say what is the matter with him. Valuable as is the knowledge gained by the use of the thermometer, it must be remembered that the temperature is but one of a number of symptoms which together constitute the disease, and that the information thus obtained by no means justifies him in disregarding other methods of examination.

In some cases the temperature is the only true guide to the progress of the complaint. A patient comes to us suffering from ague. Under the influence of quinine the symptoms in a few days entirely disappear, and the patient is convinced that he is perfectly well, and is anxious to resume his employment. By the use of the thermometer we find the temperature rises periodically, and reaches a point equal to that attained when the fits occurred in all their severity. We thus ascertain the necessity for keeping the patient still longer under treatment, and are enabled to prevent him from taking a step which would inevitably produce a relapse.

This dissociation of the other symptoms from the disease whilst the elevation of temperature still continues is not unfrequently observed in cases of ague. In many diseases the persistence of a temperature slightly above the normal, after the apparent establishment of convalescence, is the only sign of an incomplete recovery, or of the existence of some later or hitherto unsuspected mischief.

The temperature typical of a disease may be altered by an attack of bleeding, by constipation, or other similar causes, but such disturbing processes are usually of short duration, and the course of the disease in a few hours resumes its normal character. A marked or permanent alteration in the range of temperature often affords the earliest indication of the existence of some complication, of the extension of the disease, or of the lighting up of mischief in some previously unaffected region. The daily fluctuations in the temperature are much greater in disease than in health,

a variation of from eight to ten degrees in the twenty-four hours being not uncommonly met with in some acute illnesses.

We have seen that the normal temperature of the body is 98.4° , but varies somewhat in different individuals and under the diverse circumstances in which we are placed. This variation is never very great practically, as shown by frequently taking the temperature in healthy people; it does not amount to more than between two and three degrees. Any elevation above 99.5° F., or any fall below 97° , must, except under exceptional circumstances, be regarded with considerable suspicion, if not absolutely as a sign of ill-health. At the same time it must be admitted that there are persons, both children and adults, who occasionally, whilst exhibiting all other conditions of perfect health, have a temperature as low as 96° F. Although any departure from that range of temperature which we have agreed to be the normal range of temperature is to be taken as an indication of disease, however slight, the converse proposition is not true. A normal temperature is no indication of the freedom of the patient from disease—in fact in the majority of chronic illnesses there is no elevation of temperature. Whenever the temperature reaches 100° F. the patient is ill, and if it is persistent he should obtain medical advice. The temperature runs up much more readily, and from a slighter cause, in children than in adults. Diarrhoea or stomach disturbance will send the temperature of a child up two or three degrees, and this may be perfectly transitory; nevertheless, such cases should be carefully watched, for it may indicate the onset of some acute disease.

In the great majority of febrile diseases, the temperature does not rise above 106° F. It has been laid down as a rule that in fever a temperature of 108° F. is incompatible with life, even for a day, but this, like most rules, has its exceptions. Very low temperatures are occasionally met with in cholera and some other diseases. Loss of blood, whether it be from the nose, lungs, stomach, or womb, reduces the temperature in direct proportion to the quantity lost. The loss of blood in ordinary bleeding from the nose is seldom sufficiently great to exert any very marked influence on the temperature. Spitting of blood in consumption may, if profuse, be followed by a distinct fall of temperature. In cases in which the bleeding is slight, there may be no depression, but on the contrary, the blood, by increasing the mischief in the lung, may elevate the temperature.

We have said that elevation of temperature is in itself an indication for the administration of certain remedies. The aconite mixture (Pr. 38) will be found most useful in reducing fever. It is especially indicated when there is any suspicion of the existence of inflammation. It should be given strictly in the manner recommended. Another useful medicine is the solution of acetate of ammonia—half a table-spoonful in a wine-glassful of water every four hours. It is a great thing to have the bowels well opened, and to get the skin to act.

THE PULSE.

Physicians in all ages have very properly attached considerable importance to the rate and force at which the circulation is carried on. As a measure of these conditions, appeal is usually made to the pulse as felt by the finger placed over the artery of the wrist. The pulse may be examined in any part where an artery is so close to the surface that its throb can be plainly felt, but in general the most convenient locality is at the wrist. In feeling the pulse you must be very careful not to flurry your patient, or you will quicken the action of the heart, and render your observation valueless. You should see that there is no pressure on the artery in any part of its course by tight sleeves or other article of dress. By throwing your shoulders well back you can stop the pulse at the wrist. Malingerers sometimes manage to deceive the doctor in this manner.

The usual way of feeling the pulse is to place the three fingers just above the root of the thumb and the joint of the wrist, with your thumb on the opposite side so as to regulate the pressure. Its frequency may be measured by the seconds hand of a watch, but considerable practice is required to detect and appreciate its peculiar characteristics as indicative of various phases of disease: its rhythm, its fulness or softness—whether it is strong and bounding, forcing the fingers almost from the arm; or hard, small, and wiry, like the vibrations of a string; or intermittent, striking a few beats, and then apparently stopping one or two beats; or whether the pulsations, flowing into each other, are small and almost imperceptible. The information obtained by examining the pulse is often of the most interesting and instructive kind.

It is necessary that we should know the number of beats which the heart habitually makes in health, for it varies much in different people. The average number of pulsations in a healthy adult is from 70 to 75 in a minute; but there are persons who when they are quite well have always a pulse of 80 or 90, and there are others in whom the pulse seldom rises above 60. The pulse-rate varies considerably at different ages. The average number of beats in the minute is as follows:—At birth, 140; during infancy, 120 to 130; in childhood, 100; in youth, 90; in adult age, 75; in old age, 65 to 70. In decrepitude, it is said that the pulse once more increases in frequency. The rate of the pulse is usually quicker in the standing than in the sitting posture, and in the sitting than in the recumbent. It is faster in the female than in the male, by from six to fourteen beats, but this difference is not noticeable in young children. It is quickened by exertion or excitement. It is quickened by meals, and while varying thus from time to time during the day is, on the whole, quicker in the evening than in the early morning. It is said to be, on the whole, quicker in summer than in winter. Even independently of muscular exertion, it is quickened by great altitudes.

In disease the pulse may acquire a degree of frequency scarcely calculable to the touch—a rate of from 150 to 200 being in some cases recorded. A rapid pulse, if strong, full, and hard, indicates inflammation or fever; but if small and very rapid, it points to a state of great debility, such as is often present in the last stage of

typhoid and other fevers. On the other hand, in apoplexy sometimes, or when fainting is impending, or in certain affections of the heart, the pulse may be very slow. In jaundice, too, the pulse is sometimes slower than normal.

Irregularity of the pulse is a condition which, as a rule, is full of meaning and interest. This condition is curiously enough natural to some people, and when they get ill with fever the pulse sometimes becomes quite regular. Irregularity of the pulse may be dependent on a number of very different conditions; it may be caused by disease within the head, or by disease of the heart, or it may be the result of simple disorder of the stomach, or of general debility. Do not think because your pulse is somewhat irregular that you are going to die. Have you been smoking much lately? Well, that is quite enough to account for it. And we don't suppose that that last glass of three of whiskey cold last night did you any good.

Then a pulse may be intermittent. When the motions of the artery are unequal in number and force, a few beats being from time to time more rapid and feeble than the rest, we say the pulse is irregular, but when from time to time a pulsation is entirely left out, we say the pulse is intermittent. Frequently the intermission is perfectly regular, a pulsation being missing every fourth, or tenth, or twentieth beat; but sometimes we have, say ten or twenty beats, then an intermission, and very soon another. When the intermissions are frequent—*i.e.*, every four or six beats—they are more likely to be regular. Intermittency of the pulse may be due to many diseases, but it is not always of grave importance, for very trivial causes may produce it. It is rare in young people, but after middle age is not at all uncommon. In some cases it is habitual, in others occasional only, and induced by indigestion, constipation, smoking, drinking, &c. In some people it is produced by particular kinds of tea, and in others by a particular brand of cigars. Some people are entirely unconscious of the intermissions, especially those in whom it is habitual, others feel as if the heart rolled over or stopped, and are made uncomfortable.

A jerking pulse, marked by a quick and rather forcible beat, followed by a sudden abrupt cessation, as if the direction of the wave of blood had been reversed, is sometimes a concomitant of heart disease, but it occurs in the course of many other complaints. It should be regarded as an indication for obtaining medical advice, for a simple examination of the chest may serve to dispel your fears.

Another important quality of the pulse is what is called its hardness or incompressibility. You find that you can scarcely abolish the pulsation by any degree of pressure; the blood still forces its way through the artery beneath your finger. Sometimes it is felt to strike a large portion also of the finger, and then we say that the pulse is full or large as well as hard. When it strikes a very narrow portion of the surface of the finger, it is compared to a thread, it is a small pulse; and if at the same time it be hard, such a pulse is often described as a wiry pulse. A full pulse occurs in people who are plethoric, and also in the early stages of acute disease. A weak pulse denotes impoverished blood and an enfeebled condition of the system.

In fever the pulse is usually increased in frequency, there being, roughly-speaking, a rise of ten beats in the minute for an elevation of a degree in the

patient's temperature. Thus, if the natural pulse and temperature were respectively 75 beats in the minute, and 98·4° Fahr., an elevation of the temperature to 100° would probably bring up the pulse to 90 or 95. As we have already shown, the pulse is so prone to disturbance from trivial causes as to render it unreliable as an indication of the existence of fever. Excitement will, in children especially, frequently quicken the pulse by twenty or thirty beats per minute. The mere act of counting the pulse may in itself act as a disturbing element. The slightest movement, even turning in bed, will, in debilitated subjects, increase the rapidity of the circulation, and mere weakness will quicken the pulse-rate, there being nothing in the pulse itself to indicate that the acceleration is not the result of fever. Many nervous, highly-susceptible people have a certain amount of voluntary power over the pulse, and by directing the attention to it can alter its rate. Not only is a rapid pulse not of necessity an indication of fever, but a normal pulse affords no evidence of the non-existence of an elevated temperature. In many fevers, more especially typhoid, the pulse may be normal, or even below the normal, during the whole of the illness. For the detection of fever we would strongly urge upon you the necessity for using the thermometer.

THE TONGUE.

An examination of this organ may afford important information in the diagnosis and treatment of disease. It almost seems to have been designed as an index by which to estimate the condition of the system, so numerous and diversified are the morbid affections which modify its healthy appearance. It not only participates in all general derangements of the system, serving as a safe guide to a correct judgment in relation to the degree, progress, and precise stage of the disease, but it especially sympathises with the different parts of the digestive tract, at one extremity of which it is placed.

The bulk of the tongue may be increased or diminished. Its enlargement, when not so considerable as to be very obvious, may often be detected by the appearance of indentations on its sides made by the pressure of the teeth. Its contraction, when not the mere effect of dryness, is usually the result of a diminished supply of blood, and indicates either a general deficiency of that fluid or great feebleness of the heart's action. Like every other part naturally moist, it shrinks by drying and exposure to the air, and under such circumstances no general inference can be deduced from its mere loss of volume.

Its colour may be greatly and significantly modified. Undue redness of the tongue is often supposed to be the sign of irritation of the stomach. Such, however, is not always the case, for this condition is often met with when there is no other evidence of stomach derangement, and it is not unfrequently absent when some disorder undoubtedly exists. A livid or purple colour of the tongue is usually dependent on deficient aëration of the blood, and may be regarded as a valuable indication of the existence of this condition, in connection with the same colour in the lips.

Sometimes the tongue is unhealthily pale, and this is a sign of poorness of blood, or of great prostration or debility.

The "strawberry" tongue of scarlet fever is so characteristic that it is in itself sufficient to enable one to recognise the existence of the disease.

The condition of the tongue as to dryness and moisture is often worthy of attention. But caution is necessary not to mistake dryness, arising from temporary and unimportant causes, for that due to general disease. In persons who habitually sleep with their mouths open, the tongue is apt to be dry in the morning; and the same cause often produces the same effect in sickness. On visiting a patient we find the tongue unexpectedly dry, and begin to feel some apprehension until we learn that the patient has been breathing for some time through the mouth alone. A blocking up of the nostrils often gives rise to this phenomenon. In all doubtful cases, all that is necessary is to request the patient to close his mouth and then move the tongue about, so as to moisten it. If he succeeds satisfactorily, we may be sure that the dryness was accidental, and of no account. Another caution is requisite; to take care, namely, that a really dry tongue is not mistaken for a moist one, in consequence of the patient having recently taken liquid into his mouth. Dryness may exist in different degrees, from mere clamminess to perfect acidity. It depends on a deficiency of saliva, and indicates a general tendency to diminished secretion. In typhoid fever the tongue often becomes quite dry, and assumes a brownish colour.

The condition known as a furred tongue is one of the most important symptoms afforded by this organ. In this state the upper surface of the tongue is covered with an unhealthy coating, which adheres with the greatest firmness. Though very generally a sign of disordered health, it is not always so, for some people have habitually a furred tongue, especially on rising in the morning. A furred tongue is very common in the case of people who smoke much. This condition always accompanies fever, and is a decided characteristic of that affection. At the same time it must be remembered that for the detection of fever we put our trust in the thermometer, the state of the tongue being of minor importance. When the fur is white, thickish, and tolerably uniform and moist, it usually indicates an open, active state of the fever, in which, though the obvious symptoms may possibly be violent, there is little probability of any lurking mischief, or of a malignant tendency. A yellowish hue of the fur is commonly indicative of disordered liver. A brown or black tongue is a bad sign, usually indicating a low state of the system, and a general condition of depression. Malingerers sometimes manage to simulate the condition by chewing liquorice, tobacco, burnt coffee-grains, &c.

The manner in which the fur takes its departure is worth observing. When it slowly recedes from the tip and edges, thinning gradually as it retires, it intimates a favourable convalescence. A portion of fur often lingers near the root of the tongue, long after the disease has given way. Sometimes the fur loosens and separates in flakes, often beginning at the middle or near the root, and sometimes in large patches, or over almost the whole tongue at once, leaving a smooth, red surface. In these cases, if the tongue remains moist, convalescence almost always takes place, though it is usually tedious—sometimes very lingering. In less

favourable cases, the tongue, after having commenced the process of cleaning, as first described, or even after completing it, instead of continuing moist, becomes quite dry, with an aggravation of the symptoms and increased danger. This is a very unfavourable condition, more especially when, in addition to its dryness, the surface becomes gashed or fissured, or exhibits a rough, scaly appearance.

A smooth, red, glossy tongue, either moist or dry, is not uncommon in chronic diseases, and is generally regarded as a bad sign.

In some diseases the manner in which the organ is protruded may serve to indicate the nature of the complaint. Take St. Vitus's dance, for example. If you ask the patient to put out his tongue, he makes sundry attempts to do so before he can accomplish it, and then the tongue is suddenly thrust out and as suddenly withdrawn, and the jaws snap together as if he were resolved that you should have as short a glimpse of it as possible. In delirium tremens the tongue is protruded with a jerk very similar to that we have just described. It almost always trembles; usually it is covered with a yellowish fur, but it may be clean, red, and glassy on the one hand; or brown, dry, and cracked on the other.

THE URINE.

Healthy urine is a clear, watery, amber-coloured fluid, having a faint peculiar odour which is familiar enough to everybody.

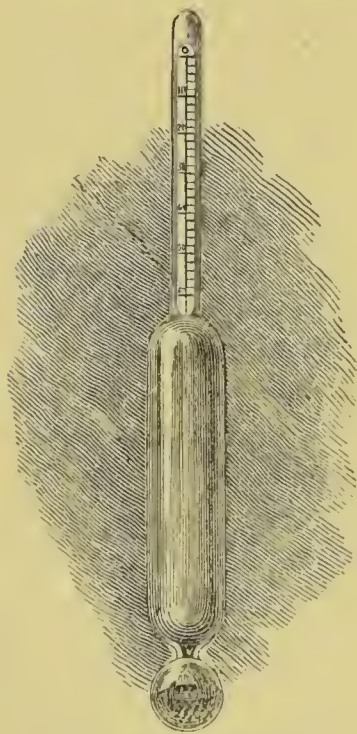


Fig. 16.—URINOMETER.

Certain drugs, such as turpentine and copaiva, and certain articles of food, such as asparagus and garlic, communicate special odours to the urine which are readily recognisable. The urine in diabetes when fresh has a faint whey-like fragrance, and when fermenting it smells like sour milk. Certain medicinal substances, when administered internally, produce peculiar alterations in the colour of the urine. Thus, when rhubarb is taken it colours the urine a deep gamboge-yellow, which on the addition of a little hartshorn is at once changed to red. Senna communicates a brownish, and logwood a reddish tint to the urine, and santonine imparts a conspicuous orange-red colour if it be alkaline, and a rich golden-yellow if it be acid. Creasote, and the external application of tar ointment, produce a very dark, almost black urine, and the same effect is noticed when carbolic acid is used as a dressing in surgical operations.

In many cases it is very important to learn the density or specific gravity of the urine. This fact is ascertained by means of a little instrument called the urinometer (Fig. 16). If you take a tumblerful of ordinary drinking-water, and immerse the urinometer in it with the bulb (B) down

wards, you will find that it will sink to the point marked 0, and this is called 1,000. Now if you substitute for water the urine of a healthy person you will find that the urinometer will not sink so far, and will probably float at some point between 15 and 25. This shows that urine, like blood, is denser or thicker than water. Supposing the urinometer had come to rest at the point marked 20, we should say that the specific gravity of that urine was 1,020, the specific gravity of water being 1,000. In taking the specific gravity of the urine or any other fluid you must take care that the instrument floats quite freely, and does not touch the sides or bottom of the vessel anywhere. You should also see that bubbles have not collected round the stem of the urinometer, for they are apt to buoy it up, and make the urine appear denser than it really is. You should never take the specific gravity of a urine directly it has been passed, but wait till it is cool, or a material error may be introduced. The best way is to collect all the urine passed in twenty-four hours, and to take the specific gravity of a portion of this. That is the only way to get a really correct reading. The specific gravity of healthy urine, as we have seen, ranges from 1,015 to 1,025, but frequently it occasionally exceeds these limits. If you take a copious draught of water on an empty stomach you will find that it will very quickly run through you, and that your urine will, for the time, be profuse in quantity, clear, and almost as dilute as water. On the other hand, prolonged fasting and abstinence from fluid will cause the urine to become concentrated, and of a higher specific gravity. These are facts which must be familiar to every one. If, however, your urine exhibits habitually, and especially in the morning before breakfast, when it ought to be concentrated, a specific gravity below 1,015, it looks suspicious. It may mean nothing, but it is suspicious. Do not be satisfied with a single examination, but take the specific gravity on several occasions at some days' interval. Do not forget that the observation is not to be made when the urine is warm. If you are quite sure that the specific gravity of your urine is habitually below 1,015 the first thing in the morning, you had better have it examined. It may mean nothing, it probably does mean nothing, but still you had better have it seen to, to make quite sure. It is about ten to one that your doctor will be able to give you a clean bill of health, or at all events put you on your legs again without much trouble. Hysterical women often pass a great deal of pale-coloured water of very low specific gravity. We are not referring to those cases, for in them the urine is very rarely affected. Then again, if the specific gravity of your urine is not too low, perhaps it is too high. A density of 1,030, especially in a pale, apparently diluted urine, is also suspicious, and if the specific gravity of your urine is 1,040 or 1,050, all we can say is, we don't like the look of it. Mind, we are not speaking of the specific gravity of a single specimen of urine, that is of not the slightest consequence, but of the specific gravity of a sample of all the urine you pass in the twenty-four hours. And above all you are not to jump to a conclusion; it may vary from day to day, and you will want several careful observations before you can be sure of your facts. If you have positively come to the conclusion that the specific gravity of your urine is habitually above 1,030, you had better state your case before the doctor, and get it set to rights again. If you are in health, you, of course, will not bother about the specific gravity

of your urine, for if anything goes wrong with it, you will probably find it out in some other way. But if you really think there is something wrong with the urine, you may derive some most useful information from the urinometer, especially if you are so situated that you cannot personally consult a medical man. We should strongly advise you not to meddle with your urine, but when occasion offers to send it straight off in a bottle to the doctor, with a plain, straightforward statement of your case. You had better let the doctor have two bottles of urine, one of the morning's urine, and the other of the evening. Do not send too small a quantity; he will want at least half a pint to examine it properly.

The more urine you pass, speaking generally, the lower density it is; that is only natural. The usual quantity is from 2 to $2\frac{1}{2}$ pints in the twenty-four hours. Some people pass very much more than others. When speaking of the disease called diabetes insipidus, we have mentioned a man who was in the habit of passing a very large quantity, indeed as much as would fill an ordinary-sized slop-pail. The amount of water you pass is to some extent regulated by the fluid you drink. Gin has the property of greatly increasing the flow of the urine. Shakespeare refers to this in *Romeo and Juliet*. Then again the amount of perspiration is not without its influence on the urine. You pass less water in summer than you do in winter, but you take it out in perspiration. It comes to the same thing in the long run.

Next, a word or two as to the reaction of urine. This is ascertained by means of test-papers. A doctor generally carries some about with him, in his pocket-book. They are made by dipping ordinary paper into litmus, and they are often called litmus paper. There are two kinds, red and blue. The blue is turned red by an acid, and the red is turned blue by an alkali. If you take a piece of blue litmus paper, and put it into vinegar-and-water, it turns red, and if you take a piece of red litmus paper, and put it into weak soda-and-water, it turns blue. Vinegar is an acid, and soda is an alkali. Ordinary healthy urine, when freshly passed, is acid, but after it has been standing for some time it undergoes putrefactive changes—that is, it goes bad—and then it becomes alkaline. If you want to ascertain the reaction of a person's urine, you must test it soon—an hour or two after it has been passed, and not after it has been standing about all day. When urine is passed in a dirty vessel, it soon becomes offensive. There is nothing like washing out the utensil occasionally with a little strong acid if you want to keep things sweet and clean. Many people never think about that. They are very particular about everything that is seen, but as the chamber utensil is generally kept concealed or out of the way, they totally ignore its claims. It may seem a very trivial matter, but it is just one of those little things that the doctor notices. He cannot very well mention it, but he appreciates it if you pay attention to it. It just makes all the difference between things working smoothly and going all wrong. Perhaps he is about to make a diagnosis on the fact that the urine is alkaline, when suddenly it dawns upon him that possibly it was a dirty utensil that had been used, and he realises what importance an apparently trivial circumstance may exercise on a question of life and death.

Both mineral and vegetable acids, when taken largely, tend to raise the acidity of the urine, but their effect is inconsiderable. Urine that is habitually alkaline

cannot be rendered acid by the internal administration of acids in even very large quantities. Benzoic acid is probably the most powerful acidifier of the urine that we have, but carbonic acid gas taken in the form of soda-water has been found useful for this purpose. Alkaline substances have a much more powerful influence on the reaction of the urine, and you can deprive your urine of its acid reaction, and render it alkaline at pleasure. Bicarbonate of potash and bicarbonate of soda will do this for it. This is often a matter of importance to people who suffer from gravel.

Urine on standing often throws down a pinkish deposit. You may often find it at the bottom of your chamber, especially on a cold winter morning. If you empty some of your hot shaving water into it you will find that it will quickly disappear, and the same will happen if you put it before the fire, supposing that you are Sybaritic enough to have one in your bed-room. This deposit consists of what is known as urates or lithates. If you took the trouble to examine it under the microscope—which you will not—you would find that it was quite structureless, not crystalline, or anything of that kind. The deposit in the urine of lithates is no sign of kidney disease, but its frequent occurrence is to be regarded as an indication of liver disorder, arising from causes sometimes temporary, at others more or less permanent. Persons who enjoy the best of health are liable to deposits of lithates in the urine after a surfeit of food, or even after partaking moderately of one of the fashionable dinners of the age. When more food is taken into the system than is necessary for the maintenance of nutrition, much of the excess is thrown off by the kidneys, and appears in the urine in the form of lithates. But what in most people is an exceptional occurrence, the result of an extraordinary cause, is with others habitual, and almost a daily occurrence. They either eat too much, the food being excessive in amount and unduly stimulating, or there is some innate power, perhaps hereditary, in the liver, in virtue of which its healthy action is liable to be deranged by the most ordinary articles of diet. Lithates in the urine are most likely to occur in people who live generously, take little exercise in the open air, and do a fair share of mental work. This condition is often associated with a feeling of weight or fulness at the pit of the stomach or over the liver; an excessive formation of wind in the stomach and bowels; heartburn and acid eructations; a feeling of oppression, and often of weariness and aching pains in the limbs, or of insurmountable sleepiness after meals, and a furred tongue, and a clammy, bitter, or metallic taste in the mouth, especially in the morning. All these symptoms are liable to occasional aggravation from errors in diet. Gradually the patient finds that he has to be very careful as to what he eats and drinks. One thing after another he is compelled to give up. First he renounces malt liquors, then he discovers that port, madeira, champagne, and burgundy disagree, and he takes to dry sherry; but at length this does not suit, and after an interval, during which a trial is made of claret or hock, and brandy or whiskey largely diluted with water, the patient finds that he enjoys best health when he abstains altogether from alcohol, and drinks nothing but plain water. He probably undergoes a somewhat similar experience with regard to solid food, one dish after another being abandoned, until, at last, if he be a sensible fellow, he makes up his mind to

live plainly, and eschew the so-called pleasures of the table. As a rule, those articles of diet are most apt to disagree which contain much sugar or fatty matter. Generally, the digestion appears to be strongest in the morning, and the patient suffers from late dinners or suppers. So much for lithates in the urine. It is a condition of extremely common occurrence in this country, especially among the well-to-do, who can afford to eat more than is good for them.

Sometimes you get blood in the urine, but that is not very common. Of course when you do get it it is a serious matter, especially when there is much of it. Sometimes there is such a lot that it clots spontaneously, straight off, and sometimes there is so little that it requires a high power of the microscope, and no end of a lot of learning, to detect it at all. You must not think because there is not much of it that it does not matter. Even if it wants a microscope to see it it is a bad business. Nobody should get blood in his urine if he can help it. Of course if you have just had an instrument passed on you, or anything of that kind, it is quite another matter, and you must expect a little bleeding. But when the blood comes by itself, without any rhyme or reason, it is time to go to the doctor and ask him what he thinks of it. It may be due to many things—a stone in the bladder will produce it, and so will an injury of any kind. Sometimes it occurs in the course of certain constitutional diseases, such as scurvy, purpura, and so on. They do say that mental emotion will produce it, but we have never seen that. It probably wants a good deal of it. It may be vicarious of other discharges; that is quite possible. You have had piles for a good many years, and have been in the habit of losing more or less blood from them every day. By-and-by you get hold of some clever young fellow who says he would like to cure your piles for you. You say, Very well, go ahead, and sure enough he cures them, but—there is always a but in these cases—you have no sooner got rid of the bleeding piles than you find there is blood in your urine. You go back to him and tell him, but he says it is no business of his, he is a specialist, a pure pile doctor, and if you want to have your urine set right you will have to go to another man, to whom he will be very happy to give you an introduction. There is one little point in connection with blood in the urine that we ought not to pass by without mentioning, and that is that in women at the menstrual period blood may accidentally become mixed with the urine. It is, of course, of no importance, although if one did not happen to think about it it might give rise to a good deal of anxiety. Blood in the urine, as we have already said, is no joke, but at the same it is no good worrying about it, and the only thing is to go to a surgeon and tell him that you expect him to make it all right for you. But if the bleeding comes on suddenly, or in large quantities, what are you to do? Well, of course you must not bleed to death, although really there is very little danger of that. Still it is a thing to be avoided. You had better lie down and get them to undo your things—the less you do yourself the better—and clap a towel, rung out of cold water, on the lower part of the belly. If you can get some ice, do, and rub it well all round the part. If there is any astringent at hand, take it. Gallic acid (Pr. 29), tannic acid, acetate of lead (Pr. 30), alum, tincture of hamamelis virginica (Pr. 45), turpentine, small doses of ipecacuanha wine (Pr. 50), or anything of that kind will do excellently well. If you cannot get anything else, a little vinegar-and-

water, or salt-and-water, is better than nothing. Do not worry yourself, you will not hurt. You had better send for the doctor, and then he will find out where the blood comes from, and all about it. Do not you let them persuade you to take any hot brandy-and-water, or anything of that kind, to keep you from fainting. If you want to faint, faint by all means—it will stop the bleeding; but you are not to have alcohol in any shape or form, on any pretence whatever, for it will only bring on the bleeding worse. If you were never a teetotaler before, you will have to be now.

Then sometimes you get albumen in your urine. That is another bad business. When there is blood in the urine there is always albumen, because blood contains albumen. You can't get blood without albumen, but you may have albumen without blood. Albumen is the same substance as white of egg. White of egg is composed of albumen. Albumen in urine does not make any difference in its appearance, for you must remember that white of egg before it is cooked is a clear glairy fluid, and you might mix almost any amount of it with urine without causing any alteration that you could detect by looking at it. If you have albumen in your urine, you probably won't find it out for yourself. Your doctor will do that for you. If the specific gravity of your urine is habitually below 1,015, it is not at all improbable that you have albumen in your urine. Albumen is present in the urine in Bright's disease. We will not give the tests for albumen now, but will reserve them till we speak of that complaint. The treatment of albumen in the urine will be guided by the complaint on which it is dependent.

Sugar is sometimes found in the urine, and it constitutes the disease known as diabetes mellitus, or sugary diabetes. There are two kinds of diabetes, sugary diabetes and insipid diabetes; in the latter complaint the quantity of urine is usually very great and of low specific gravity, but it contains no sugar.

Spermatozoa are occasionally found in the urine. They are of course microscopical. They are never seen in motion in the urine. This is a positive fact. If you are ever stupid enough to fall into the clutches of a quack, and he tries to frighten you by pretending to show you living spermatozoa in your urine, tell him that you know better than that. He has probably got them from paste and vinegar, or something of that kind. It is an old trick, but it is still often practised by these scamps with the view of playing upon the fears of their unfortunate victims. If you see anything in motion in your urine, or in anybody else's urine, you may be sure that it is not spermatozoa, for urine kills them straight off.

Sometimes the urine is passed quite white, just like milk. In this country cases are rare, but it prevails epidemically in the West Indies, the Mauritius, and India. The majority of cases met with in Europeans are found among sailors, merchants, colonists, and others who have passed a portion of their lives in one or other of these countries.

PAIN.

This feeling is quite indefinable, and can be known only by those who have felt it. There are many different kinds and degrees of pain. Different kinds of disease are accompanied by different kinds of pain, and the same disease may produce

different modifications of pain, according as it affects different parts. Thus the pain that belongs to inflammation of the lungs differs from that which is felt in inflammation of the bowels. Then, again, pain differs not only in its kind and degree, but in its mode of recurrence. Thus it may be fugitive or persistent, wandering or fixed, intermittent or continued. In its different grades it is slight, moderate, severe, violent, intense, excruciating, or agonising. Different epithets are given to the different varieties of pain, persons endeavouring to explain how they feel by likening their sensations to something which they have felt before, or fancy they have felt. Thus we hear of sharp pain, shooting pain, dull pain, gnawing pain, stinging pain, tearing pain, and so on. When attended with a beating sensation, consequent upon the heart's action, it is called pulsating or throbbing, when attended with a feeling of weight it is described as a heavy pain, and when with heat as a burning pain. If pain be felt in a part only when it is touched it is said to be tender. A part may be both painful and tender, or painful without being tender, or tender without being otherwise painful. There are also peculiar sensations, such as itching, tingling, and pricking, which, in excess, become positively painful, though they might not be considered so in their slighter degrees. We have seen that pain is sometimes wandering or sometimes fixed. Wandering or flying pains are generally nervous or neuralgic in origin, whilst inflammatory pains are commonly fixed; but the distinction is by no means constant.

Pain often is felt not in the part really affected by disease, but in some distant part. Thus inflammation of the liver causes pain in the right shoulder, inflammation of the hip-joint excites pain in the knee, disease of the heart is often attended with pain running down the left arm, and many headaches result from irritation of the stomach. We call this indirect or sympathetic pain.

It may be observed of pain in general that it is differently felt, or at any rate differently complained of, by persons of different constitutions and temperaments. Different people have very different degrees of sensibility, and feel with different degrees of acuteness. Some are but little sensitive to painful impressions of any kind, whilst others suffer intensely from slight causes. There are individuals who say that it hurts them very little to have a tooth out. It has been stated that there are even national differences with respect to the power of bearing pain. In surgical operations, before the introduction of chloroform, it was observed that the Irishman, generally speaking, felt more acutely, and gave freer vent to his feelings in cries and exclamations than the Scotchman, who most commonly preserved a resolute silence.

In judging of the degree of pain in any particular instance, one cannot always be guided by the statement of the sufferer. Very different meanings are often attached to the same words by different individuals, and some have a habit of employing terms of exaggeration for all their feelings. One must be guided more by the tone of voice and expression of countenance than by what is said. If a person tells you with perfectly composed feelings and a calm, equable tone of voice that he is suffering "excruciating pain," you are justified in estimating its severity greatly below the real value of the term.

In complaints associated with low spirits and hypochondriacal feelings, the pain

often depends in a great measure on the eager attention that is paid to it. Accounts given by people who are always ailing must be taken with a grain of allowance. One often meets with people, lazy, selfish, hypochondriacal, always complaining, but never really ill. They take it as an offence if you do not seem to implicitly credit what they say ; and yet if you cannot convince them that much of what they suffer depends on their undue attention to it, they will never get well. They often cease to feel pain, or, at all events, they forget to think of their complaints when their attention is engaged by conversation, music, or otherwise. Powerful excitement, a loss of income, for instance, or any great mental or moral shock, often does them a world of good. We must admit that nothing short of an earthquake would move some people.

Fortunately, the means at our disposal for the relief of pain are neither few nor uncertain in their action. We can often assuage pain when we cannot cure the disease on which it is dependent—for example, in cancer of the womb or breast. There is no pain more dreadful or more dreaded than that attendant on surgical operations, and yet even that has its specific antidote. By merely breathing for a few minutes an invisible gas, the corporeal sensibility is laid aside, and the knife executes at leisure and unfelt its terrible but salutary work. When we consider what ether, and chloroform, and nitrous oxide have done for us, and what they will do in the future, the vast amount of torturing pain that has been spared to thousands, and the pain that countless generations yet unborn may escape, we cannot help feeling grateful for so merciful a boon conferred on suffering humanity. Then, again, in opium and its active principle, morphia, we have the means of relieving the most agonising pain of disease, and substituting for it a calm and refreshing sleep. Our specific remedies for neuralgia are, as we shall presently see, neither few nor impotent. Every day adds to their number, and to our knowledge of the indication for their administration. A few years ago bromide of potassium, phosphorus, and gelseminum were practically unknown ; nowadays we recognise their worth, and are enabled by them promptly to relieve many a case of acutest suffering.

FACIAL EXPRESSION AS AN INDICATION OF ILLNESS.

This often affords valuable information in the treatment of disease, and should be carefully studied by all who have to do with the sick. The power of observing is a great gift. Occasionally, as in cases of insensibility, it affords almost our only means of detecting the nature of illness. By its means we recognise the existence of pain, of mental anxiety, of depression, or even insanity, when other signs are either wanting, obscure, or not available. In the case of children, the demented, and persons who may be disposed to deceive us, it is a peculiarly valuable resource. A doctor nearly always places his patient in a chair facing the window, so that he may watch the play of his features. Many diseases are attended with a characteristic aspect of countenance, which will often be quickly recognised by the experienced, so far at least as to suggest the disease in question. By a glance it is often possible to ascertain whether our patient has changed for the better or worse since the last visit.

This power is attainable only by experience and close observation. To most doctors it comes almost unconsciously. It is one of the highest forms of tact. The modifications and combination of features which constitute expression in disease can be learnt only at the bedside. They are too numerous, too intricate, too delicate, too subtle, and too evanescent to admit of description.

But there are certain changes in the face of a more tangible character, connected rather with the bodily function than with the action of the mind, which can be readily and accurately appreciated. The colour, shape, and various movements, independent of expression, often yield important information. Walk through a street of a crowded city, and watch the countenances of the people as they hurry by, and you will be surprised to find how much you can learn about them and their complaints, mental and physical. Look at that man with his fat, red, bloated face, and you have no difficulty in recognising *drink*. You know that in course of time he will get liver or kidney disease, and will die of dropsy. Look at the tall, thin, pale girl carrying a big bandbox. See how anæmic she is. You know she is over-worked and badly nourished; you know that hers is a lot of toil, and that a holiday, a day in the country, a glimpse of the bright sunshine, and the fresh fields and flowers, is to her unknown. You know that she is not regular, that her appetite is poor, her bowels confined, and that she often suffers from neuralgia and sick-headache.

Paleness has its significance. It may be due to anæmia, debility, or nausea, and some other conditions. There are different kinds of paleness having different meanings, as the paleness of consumption and that of cancer. Yellowness of the face, or jaundice, as we all know, points to some morbid condition of the liver. A bright red colour of the cheeks signifies one thing, and a dark red, purple, or violet colour another, and often the very reverse. In the former case the blood is duly arterialised by the lungs, and pumped up vigorously into the head by the heart; in the latter, the heart is acting feebly, and the organs of respiration are performing their functions imperfectly. The colour of the lips is peculiarly expressive in its different tints of crimson, purple, and pallor. The features may be full, swollen, and turgid, or they may be shrunk, contracted, and fallen, in the one case indicating congestion, and in the other exhaustion and prostration.

Coldness of the ears and tip of the nose may indicate the approach or presence of a chill, when other symptoms are wanting and ambiguous. In children, coldness of the cheeks, nose, and ears may enable us to decide upon the necessity for administering a stimulant when other symptoms might leave us in doubt. The flushings of the face, from which many middle-aged women suffer, are so common as to be familiar enough to most people.

NURSING AND THE CARE OF THE SICK.

GENERAL QUALIFICATIONS AND DUTIES OF A NURSE : Age—Strength—Dress—Attention—Retieence—
MANAGEMENT OF THE SICK ROOM : Ventilation—Temperature—Disinfectants—Light—Quiet—
PRACTICAL DETAILS : Beds—How to Make and Change—Invalid Bedsteads and Cushions—Bed
Sores, how to Avoid and How to Cure—Cleanliness an Essential—Bed Frames—Curtains—Bed Rests
and Tables—Invalid Carriages and Chairs—How to Undress a Patient and put him to Bed—ADMINIS-
TRATION OF MEDICINE : Pills, Powders, &c.—Enemata—Suppositories—Lotions—Fomentations and
other External Applications—Warm Baths—Vapour Baths—INVALID DIET : General Directions—
Special Recipes—Points to which a Nurse's Attention should be Directed.

GENERAL QUALIFICATIONS AND DUTIES OF A NURSE.

THE treatment of disease in the present day does not merely consist in the dosing of a patient with nauseous drugs. The wholesale drugging which was the chief characteristic of the medical care bestowed by our ancestors upon their sick relatives and friends—strong or weak, children or adults—is happily a thing of the past; and although we should do wrong not to make use of the very many most valuable and indispensable remedies which modern science has placed at the disposal of the medical profession, we should at the same time remember that the nursing of the invalid is scarcely of secondary importance. For all diseases, the rule of treatment should be as follows :—

1. So to arrange the surroundings of your patient that nature may have fair play in the struggle with disease.

2. To administer remedies, or, in other words, to call art and science to the assistance of nature.

The direction of both these departments of treatment is entrusted to the medical man. The work of carrying out the details of treatment is divided, that of the former department devolving on the nurse, and that of the latter mainly on the doctor himself.

Nursing must and ought to be considered as a profession. No one, it may safely be said, is a nurse by nature; and it is no more possible to know nursing by intuition than it is possible to acquire the dexterity of a Reynolds or a Paganini without years of patient and laborious practice.

It is the commonest thing to hear a lady say, "But you know I am such a capital nurse!" and in nine cases out of ten we shall be safe in inferring that those who make assertions of this kind have in reality no notion whatever of that concerning which they talk so glibly.

We remember hearing a story of a countryman who took his eldest son to one of our great London builders, with the view of getting employment for his boy in the great man's building-yard.

"Has your son any knowledge of carpentering?" was the first question asked.

"Oh yes, sir," was the reply, "and very clever he is at it."

"What can he do?"

"A'most anything, sir. He's never happy but what he's making something."

"Oh, indeed! Now, can he make a panel-door?"

Since the youth who was the subject of this conversation was a country lout of sixteen years, it is needless to say that an answer was returned in the negative. Nevertheless, the boy was apprenticed, and having no little natural aptitude, he became, when his education was complete, a first-rate workman.

So it is with many of these persons who have a supposed natural aptitude for nursing. Were one to question them, and ask, "How do you make and apply a poultice?" or "How do you change the bottom sheet?" they would probably be unable to return a satisfactory answer. Nevertheless, with a little patient study of the subject, and after proper tuition under the superintendence of a skilled professional nurse, they might in most cases become adepts in the art of tending on the sick, and of ministering to and anticipating their various wants in a way which they could never have found out for themselves.

Nursing is essentially a practical matter. There is no theory in nursing, and there is not much that can be learnt from mere reading. It is essential that every one who intends to make nursing the business of life should obtain practical experience in a public hospital, or other similar institution, and under the guidance of some one, with the double authority of position and knowledge, to correct errors and give all necessary instruction. It is very generally recognised now that nursing is women's work *par excellence*, and signs are not wanting that ladies of the middle classes will be forthcoming in large numbers to receive instruction at least, even if they go no further, of the most systematic kind, and if they find it necessary to turn that instruction to practical uses.

We may be expected to give some notion of the personal and physical qualifications which are necessary for the making of a good nurse. Such a task, however, is by no means easy, for, after we have enumerated those qualities which no nurse should be without, we feel that we must still leave undescribed that *indescribable something* which some people call *tact* and others *manner*, the possession of which will make a good nurse out of materials which are physically unfavourable, and the absence of which will mar a paragon of strength, prudence, and intelligence. With many nursing is, unhappily, a matter of necessity and not of choice. In dealing systematically with the subject of nursing, it is necessary to set the highest standard—viz., that of a carefully-trained professional nurse—before the reader's eyes, to which all may at least try to attain. The reader must bear in mind, however, that there is no essential difference between hospital nursing and home nursing; and that the rules we have laid down are applicable alike to the trained nurse in a public institution or the amateur who is trying her best to perform a sacred duty in the domestic circle.

A nurse must be strong. Her occupation is an unhealthy one, and involves confinement to the house, loss of rest, and other hardships which a robust constitution is alone able to stand. A delicate woman—one who is liable to "knock up" at slight causes—is not fit to become a nurse, and if she be wise she will not make the attempt, but will choose some other employment more suited for her constitution.

It is a great advantage to a nurse to be muscularly strong, for she has often to deal with heavy, helpless patients; but *muscular* strength need not be looked upon as indispensable, provided she be *constitutionally* strong. She must not be too big. A heavy lumbering woman is an annoyance in the sick-room. She ought to possess great activity of mind as well as body, and be quick to apprehend, quick to perform. Manipulative dexterity is a great advantage, and in this respect nurses differ immensely, for one will dress a patient completely while another is fumbling with a couple of buttons. For those who are compelled by circumstances to be nurses, but who unfortunately are not muscularly strong, it is important to recognise their deficiencies. They must relegate to others the hard work for which they are not suited, and endeavour so to husband their strength that the invalid shall not be deprived of their superintendence and necessary control.

Mentally she should have a calm, equable temperament; not given to flurry and unnecessary haste, but able to perform her allotted tasks with no needless delay, with the most careful attention to detail, and without noise or demonstrative activity. She should ever have—without seeming—an eye of pity for every sign of suffering, while at the same time no visible grief or alarm should be detectable in her countenance. It is well known that the cheerful face of a nurse is always pleasant to a patient, and it cannot but be reassuring and conducive to occasional forgetfulness of suffering and distress.

Relatives—on whom of course in most cases the duty of nursing naturally falls—always make worse nurses than who have no such tie to the patient, and especially so if they have had no previous training. They cannot be expected to regard with the necessary calmness the suffering of one to whom they are tied by bonds of friendship and consanguinity, and there is nothing more trying to an invalid to see constantly around his bed the too-anxious countenances of his family, the doleful expressions of which are often the cause of a needless and mischievous sensation of alarm. Again, relatives have not the necessary control over patients; and one often sees the strength of an invalid wasted by little peevish family squabbles over food or medicine, which would have been taken without question if offered to him by a nurse with authority on her side. Invalid children are proverbially naughty and perverse with their parents, and invalid parents are usually unwilling to be controlled in the least degree by their children.

A nurse should not be too young, especially if she intends to devote herself to general nursing and the care of either sex. Miss Veitch, whose “Handbook for Nurses for the Sick” is well worthy of careful perusal, thinks that between twenty-five and thirty is the proper time for a woman to begin her training. “I think,” says this authoress, “those women who do not begin hospital work until after twenty-four years of age stand the strain upon their health better, and for a greater number of years.”

Women who think of taking up nursing as a “calling” should remember that the work required of them is often of a most unpleasant kind, and that whatever duties come in their way it will be their duty to perform them without flinching. Nothing connected with a sick person is to be relegated by the nurse, be she born a lady or a peasant, to another with less experience. The duty of nursing is a sacred

one, and there must be no shelving of responsibilities, no shirking of unpleasant duties. A nurse cannot be too highly educated. A cultured mind is always a blessing in a sick-room. If the patient be a person who has received a high intellectual training, he will appreciate similar qualities in those about him, and if, on the contrary, the patient is one of the lower orders, it will be found that the influence of education is always what the poet has declared it to be—

“Ingenuas didicisse fideliter artes
Emollit mores, nec sinit esse feros.”

Nursing is not to be undertaken from any sentimental motives; from any notion of becoming like the “Guardian Angels” of the novelist. Such an idea must end in disappointment, for it will be found that the really sick have but a poor appreciation of sentiment, and that the routine duties of the sick-room are monotonous and tiresome, and such as leave but scant time for indulging one’s imagination or poetic feelings.

How should a nurse be dressed? She should be scrupulously clean, both for her own safety and for the sake of those with whom she comes in contact. Her dress should be simple, with no needless trimming, but by all means let it be becoming, and “not expressed in fancy.” Many ladies who take to nursing think it necessary to assume the most hideous garb imaginable. If the exigencies of religion necessitate this course, we regret our inability to argue the case, but on medical grounds we feel quite sure that the dress of an attendant on the sick should be simple and becoming, and not such as will excite the wonder, the fear, or the risibility of a patient. The dress should be just long enough to clear the ground, and should be made of printed calico, or some other *washing material*, of a light colour and a smooth surface. Moreover, it should be frequently washed. Some of the nursing sisterhoods adopt a robe made of black flannel with long hanging sleeves. Nothing can be imagined more ill-suited for a nurse’s dress. The blackness of it prevents the ready detection of dirt, the rough surface and absorbent texture is ready to catch and suck up all disease particles, whether dry or liquid, and the dangling sleeves and floating stole and girdle are certainly likely to hitch in every projecting object, and as they fulfil no useful purpose, it is difficult to see why they should be retained. Some of these lugubrious dresses are worn, too, for as long a period as were the hair shirts of the mediæval hermits. And we are sorry to say that we have heard a sister boasting of the grimy penance to which she had subjected herself for more than six months.

It is to be regretted that ladies who perform their duties with so much zeal and with the highest possible intelligence, should run the risk of marring much of the effect of their good deeds by adhering to a fashion of dress which ought to have died out with the Middle Ages, and before the dawning of the science of hygiene.

A nurse should wear a neat cap, and should be careful to have shoes which are quiet and do not creak. A pair of scissors and a pin-cushion carried from a girdle will be found also of the greatest service. It is customary with many nurses to carry with them a small pocket case filled with instruments, such as

scissors, dressing forceps, caustic holder, tongue depressor, and so forth, but this is unnecessary, except perhaps under exceptional circumstances.

A nurse should always keep a diary of everything that passes in the sick-room, taking care to record every little event at once. In this way she will greatly assist the medical man, and will be the means of saving much valuable time. Every action of the bowels, every administration of food, and every dose of medicine should be carefully noted down. The following are samples of the kind of reports which a professional nurse would be expected to keep:—

NIGHT REPORT—April 10th, 1876.

9.0 p.m.—Subcutaneous injection of one-sixth of a grain of morphia.

Sound and refreshing sleep from 9.30 to 12.30.

12.30 a.m.—A small tea-cupful of arrowroot was administered.

This was followed by free perspiration.

Very restless till 4 a.m., when there was a copious loose action of the bowels.

4.30 a.m.—A dose of medicine.

Slept tranquilly from 5 till 7 a.m.

Coughed two or three times during the night. No expectoration.

DAY REPORT—April 11th, 1876.

9.0 a.m.—Temperature $103^{\circ}\cdot4$.

9.30 a.m.—Loose action of the bowels.

10.0 a.m.—Four ounces of beef tea, with six drachms of brandy, administered.

11.0 a.m.—Medicine.

11.15 a.m.—Loose action of the bowels.

12.25 p.m.—Ditto.

12.30 p.m.—Beef tea and brandy.

1.0 p.m.—Another action of the bowels.

Complained a good deal of pain in the abdomen.

2.15 p.m.—Bowels acted again.

2.30 p.m.—Starch and opium enema, as ordered.

3.0 p.m.—Cup of arrowroot with six drachms of brandy.

Dozed almost continuously till 7 p.m., when medicine was administered, and a draught of milk and soda-water was taken. No cough to-day. No perspiration.

To keep such a record as this would naturally require a high standard of efficiency, and indeed it could be done only by a thoroughly trained professional nurse. But the principle of the thing, which is what we wish to insist on, holds good throughout; and even in the domestic circle each occurrence in the sick-room should be recorded at once. There must be no trusting to memory, for in case of forgetfulness justice may not be done either to the patient or his medical attendant. Thus—

APRIL 12th, 1876

9.0 a.m.—Breakfast—egg, dry toast, tea.

10.30 a.m.—Bowels acted naturally.

11.0 a.m.—Medicine, and a cup of beef tea.

2.0 p.m.—Dinner—minced chicken, custard pudding, one glass of port wine.

Dozed till 4.

5.0 p.m.—Mrs. A. called and stayed half an hour.

5.30 p.m.—Medicine.

Slight pains in the bowels.

7.0 p.m.—Cup of arrowroot, with two table-spoonfuls of brandy

Slept soundly all night.

The preceding may be looked upon as fair samples of the kind of record which it is advisable to keep, but no nurse will be quite expert at this part of her duty until she has had a great deal of experience, and begins to be tolerably well acquainted with the course and the most characteristic phenomena of different diseases. A nurse who watches the course of a case continuously will have every symptom which the patient presents forced upon her attention, and *whatever strikes her attention* it is her duty to communicate it to the medical attendant. One nurse will say, "I heard the patient cough once this morning;" and this information may be the means of directing attention to, and ensuring the early treatment of some complication of the lungs; or if the cough has been due to some little passing irritation of the throat, no harm will have been done by mentioning it, and the nurse will have done her duty. Another nurse, after grave lung mischief has declared itself, will say, "Oh, I heard him cough a little two nights ago, *but I thought it was nothing.*" This nurse will not have fulfilled her duty, and her reticence may have lost her patient some hours of early treatment; and it should be borne in mind that it is always easiest to grapple with a disease while it is in its earliest stages.

Never talk unnecessarily to a patient. We do not mean by this that a nurse is to abstain from holding conversation with a chronic invalid, but we wish our caution to apply particularly to those who have the care of acute invalids, to whom talking is an effort, and with whom anything like argument is quite out of place. If food or medicine is to be given, let the portion or the dose be prepared, and when ready offer it to the patient as if there were no question that he were going to take it. Never say, "Will you take this, or try that?" or, "Shall I get your medicine now?" or put similar questions. There is no use in doing it, and if the invalid raise objections, as is often the case, the necessity for argument arises, which is a thing always to be avoided. Inexperienced nurses are very apt to pester and bother a patient with incessant sympathetic questionings, "Are you in pain now, dear?" "Does your head ache?" "Are you lying comfortably?" "Will you have the door open?" and so forth. This is bad. The good nurse will watch a patient, and will be quick to detect any complaint or sign of discomfort, but her sympathy will show itself in some action designed to remedy what is amiss, rather than in misplaced expressions of pity.

Miss Veitch, in her valuable little work, gives such good advice, that we shall reproduce a part of it verbatim. She says, "I would give one important caution to nurses, that is, to guard well their tongues. The tongue is an unruly member, and the wise man said, 'In the multitude of words there wanteth not sin;' though it is not always necessary that there should be a multitude of words to do mischief. It is the great weakness of women generally that they must talk, whereby they often do serious harm. Nurses, from the peculiarity of their relations to their patients, often become possessed of information regarding them which ought to be considered perfectly sacred, never to be breathed to human ear, and yet, alas! how often does the temptation to tell a secret overcome the sense of honour and duty in this case, and these matters become the conversation of gossiping women. Nothing must be withheld from the doctor that can affect the

patient's interest, but beyond him the nurse had better never speak of her patient except in that general way which can hurt no one, and even then take care that she does not indulge in what is called 'harmless gossip.' (Is gossip ever harmless? If it does not hurt the hearer, does it not injure the speaker?) Many people seem to consider they may ask questions of nurses about their patients which they would not dare to ask the sick person or his friends; therefore nurses must be on their guard not to be led to say anything which, were they in the patient's place, they would not like said of themselves. There is great wisdom in the saying, 'Put yourself in his place.' If his nurse would always do this, her patient would seldom have to complain of either her deeds or her words. Many people—women particularly—are selfish from want of thought, rather than from want of heart, and I know of nothing, after principle, which is so likely to check selfish thoughtlessness than to endeavour to change places in thought with our neighbours; and I honestly believe many women gossip from mere thoughtlessness rather than to gratify ill-natured feeling. A patient ought to be able to look to his nurse as his best friend for the time being, and to feel that everything concerning his most private life is as safe with her as with himself."

MANAGEMENT OF THE SICK-ROOM.

Ventilation.—Miss Nightingale, in her "Notes on Nursing," says, "The very first care of nursing, the first and the last thing upon which a nurse's attention must be fixed, the first essential to the patient, without which all the rest you can do for him is as nothing, with which I had almost said you may leave all the rest alone, is this: TO KEEP THE AIR HE BREATHES AS PURE AS THE EXTERNAL AIR WITHOUT CHILLING HIM. Yet what is so little attended to? Even where it is thought of at all, the most extraordinary misconceptions reign about it. Even in admitting air into the patient's room or ward, few people ever think where that air comes from. It may come from a corridor into which all other wards are ventilated; from a hall, always unaired, full of the fumes of gas, dinners, of various kinds of mustiness from an underground kitchen, sink, wash-house, water-closet, or, even as I myself have had sorrowful experience, from open sewers loaded with filth; and with this the patient's room or ward is aired, as it is called—poisoned, it should rather be said. Always air from the air without, and that too from those windows through which the air comes freshest! From a closed court, especially if the wind does not blow that way, air may come as stagnant as from any air in corridor."

Miss Nightingale goes on to say that a man does not catch cold in bed, and that it is quite possible to open the windows and to keep him thoroughly warm at the same time; and in a foot-note she adds, "With private sick, I think, but certainly with hospital sick, the nurse should never be satisfied as to the freshness of their atmosphere unless she can feel the air gently moving over her face when still."

There can be no doubt that the eminent authoress whose remarks we have quoted is right in the main, and that a sick man cannot breathe too pure an atmosphere; but we dissent entirely from the last remark, and we should rather

say that directly a nurse when standing still can feel the air beating on her face, she ought to recognise the fact that a draught has been created, and to the majority of sick a draught is in the highest degree dangerous. A sick-room ought always to be so fresh that a person coming from the outside should be unable to recognise any feeling of closeness or any improper smell, but a nurse should be taught that when an open window is impossible, either from the state of the weather or the condition of the patient, that there are ways of ventilating a room without creating a draught.

If the bottom sash of the window be pulled a little upwards, and a piece of board or a sand-bag be inserted between the bottom of the sash and the sill, the air will enter at the opening left between the junction of the two sashes, and the in-coming current will travel upwards to the ceiling, and not laterally in any way. In this way there will be a constant renewal of the air, but no draught will be possible.

A careful nurse will always be on her guard, not only to admit fresh air from without, but also to keep the air of the room as pure as possible. Nothing that can foul the air should be allowed to remain in the room longer than is absolutely necessary. All the excretions of the patient are to be removed with as little delay as possible. No cooking is to be carried on if it can be avoided, and all pungent liquids, such as brandy, wine, or medicine, should be kept in some adjoining room. If food or stimulants be spilt upon the bed-clothes, they should, if possible, be changed, for nothing is so antagonistic to appetite as the sickening smell of spilled wine, brandy, or beef tea. The room should be kept clean, and in order that it may be kept as clean as possible with the least amount of trouble, it is always advisable at the beginning of an illness to disencumber it as far as possible of all superfluous furniture. Carpets, bed-hangings, heavy window curtains, wardrobes filled with wearing apparel, should, as far as possible, be removed. A few strips of carpet by the bedside and in front of the fire give an air of comfort, and if these can be thoroughly shaken out of doors every day there is no harm in retaining them. The room should be thoroughly swept and dusted every day, and a good nurse will manage to effect this almost without attracting the attention of the patient. It is necessary that this should be done, and none but a bad nurse will neglect it. Pastilles and strong scents are to be employed as little as possible, and if a room be kept clean this will be seldom necessary. A few flowers growing in pots are a cheerful addition to the sick-room, and the pleasant scent of them—if not too strong—is agreeable to the patient. Such strong-smelling flowers as hyacinth, magnolia, gardenia, or orange-blossom should not be used.

A small folding screen, three or four feet in height, is an almost indispensable piece of furniture in the sick-room. It serves to keep the draught off at such times as it is necessary to open the windows. It screens the patient from the fire, and is a great protection when he is well enough to get out of bed, either to sit in a chair, or to obey the calls of nature.

Some people have a prejudice against "night air," and erroneously think that it is to be excluded at any price. Such a notion arises from ignorance; and if the windows be kept open in the manner we have directed, they may be left so throughout the whole of the night.

The sick-room should be a large one, not only because the patient never leaves it night nor day, but because the air of it is consumed by his nurses and other attendants, besides himself. Directly a patient is well enough to be left alone at night, he should be so left, because the air of a room occupied by one person will keep fresher than when occupied by two. Excepting when a person is very seriously and acutely ill, it is always advisable that the night nurse should remain in an adjoining room rather than in the sick-room, provided that the patient has ready and certain means of communicating with her.

A very capital method of communicating with a nurse in an adjoining room is by means of a pneumatic communication, which consists of a long india-rubber tube, terminating at one end in a whistle, and at the other in a compressible air-ball. When the air-ball is squeezed the whistle sounds. Now if the air-ball be placed on the pillow of the invalid, the tube being fastened to the bed-rail with a tape, the tube may be taken out of the sick-room and any reasonable distance to the room of the nurse, the whistle being secured to the head of the nurse's bed, and as close to the nurse's ear as may be deemed advisable. By this method the patient is enabled to communicate with his nurse without any appreciable effort on his own part. If the patient be less ill, a communication may be established by means of a cord tied round the nurse's wrist, or even the medium of an ordinary bell may be sufficient.

Temperature.—In this country it is almost always necessary to have a fire in a sick-room. A fire gives warmth, and it also assists ventilation very materially. The fire should be brisk with a bright flame. A sluggish fire backed up with cinders and ashes is of very little use for ventilation. A thermometer should always be kept in a sick-room, and it should be placed as near the centre as possible. The temperature should not be lower than 60° Fahrenheit, and in many cases, especially of lung disease, it is deemed advisable to have the temperature considerably higher. A thermometer is obviously the only safe guide to temperature. The feelings of the nurse or the patient are of little use. It is very important not to let the fire go out or get too low during the night or early morning, which is the coldest time of the four-and-twenty hours. Many a patient with bronchitis has been killed by the negligence of his nurse in this respect.

Disinfectants.—A nurse who is duly careful to keep the sick-room well ventilated, thoroughly clean, and properly warm, is of inestimable value. Disinfectants are not to be indiscriminately used in a sick-room. If they be ordered by the medical man (as, perhaps, in cases of scarlet fever), it is all well and good, but it should be borne in mind that, except in cases of infectious fever, there ought to be nothing in a sick-room to disinfect, and the employment of strong smelling fumes or liquids is generally an indication that the nursing has been at fault to have allowed the necessity for their use to have arisen. There are cases, of course, of foul discharges from the body which require the employment of chemical deodorisers, but even these cases, since the introduction of the antiseptic method of treating wounds, are now of far less frequent occurrence than formerly. There are few disinfectants which have not some odour of their own, and any artificial odour of this kind is too apt to mask some other smell which would otherwise serve as a warning to a nurse to open a window or adopt some other means of purification.

A sick-room should not be unnecessarily darkened. It sometimes happens that an invalid cannot bear the light, or that it is desirable to encourage repose in every way, inclusive of shutting out the light, but if no good cause to the contrary exist, daylight should be freely admitted. Daylight is cheerful, and its free admittance to every corner of a room is conducive to cleanliness. There can be little doubt also that daylight is necessary for perfect health, and that under its influence nutrition is more active. If a sick-room be kept too dark, as very often is the case, it soon becomes very difficult for the occupant of it to bear the light at all, and he becomes markedly sensitive and delicate.

Light.—At night time it is generally advisable to burn a light, but it should be remembered that a light fouls the air of a room as much as a living being, and that the presence of a nurse and a light in a sick-room, in addition to the patient, is quite a serious tax upon its power of proper ventilation. A night-light should be as small as possible, and should burn a very small flame. It should be looked upon rather as a means from which a proper light may be obtained in case of necessity, than as a regular source of illumination for the room. A gas-jet turned to its lowest is the best form of night-light. Failing this, any of the ordinary night-lights answer the purpose admirably.

Although the daylight is not to be excluded during the day, care must be taken that it is not too obtrusive in the early morning during the summer months. It very often happens that invalids who are restless during the early hours of the night begin to fall asleep and to doze about four o'clock in the morning, and it is on all accounts important to take care that the early sunlight does not disturb the precious morning slumber.

Miss Nightingale has some very pertinent remarks on the "Petty Management" of the sick-room. It is very important for a nurse to fully recognise the fact that she cannot always be with her patient. It is greatly to the advantage of the patient that the nurse keep in good health, and it is therefore incumbent upon her to arrange for proper rest, and for a due amount of exercise. In making these arrangements, however, she must be careful really to place some one in charge during her absence, and to see that the person in charge is duly instructed as to the proper course to pursue. It is during the absence of the nurse that injudicious visits are often paid to patients, and they become tired out by conversation. A really good nurse will always foresee the possibility of these little *contretemps*, and will as far as possible guard against them. "How few men or women," says Miss Nightingale, "understand either in great or in little things what it is the being in charge—I mean, know how to carry out a charge! . . . To be in charge is certainly not only to carry out the proper measures yourself, but to see that every one else does so too; to see that no one either wilfully or ignorantly thwarts or prevents such measures. It is neither to do everything yourself, nor to appoint a number of people to each duty, but to ensure that each does the duty to which he is appointed. This is the meaning which must be attached to the word by (above all) those "in charge" of sick, whether of numbers or of individuals (and, indeed, I think it is with individual sick that it is least understood). One sick person is often waited on by four with less precision, and is really less cared for, than ten who are waited on by one; or, at

least, than forty who are waited on by four; and all for want of this one person 'in charge.'"

A sick-room should be quiet.—This is universally admitted, and extraordinary precautions are often taken to insure quietness. The straw in the street and the muffled knocker are the familiar insignia of sickness. Sudden startling noises are the ones which annoy the sick most; while, on the other hand, it is astonishing how little the patients in the London hospitals heed the inevitable noise which is incessantly going on both within and without.

"Unnecessary noise," says Miss Nightingale, "or noise that creates an expectation in the mind, is that which hurts a patient. It is rarely the loudness of the noise, the effect upon the organ of the ear itself, which appears to affect the sick. How well a patient will generally bear, *e.g.*, the putting up of a scaffolding close to the house, when he cannot bear the talking—still less the whispering—especially if it be of a familiar voice, outside his door!

"Never to allow a patient to be waked, intentionally or accidentally, is a *sine quâ non* of all good nursing. If he is roused out of his first sleep, he is almost certain to have no more sleep. It is a curious but quite intelligible fact, that if a patient is waked after a few hours' instead of a few minutes' sleep, he is much more likely to sleep again. Because pain, like irritability of brain, perpetuates and intensifies itself. If you have gained a respite of either in sleep, you have gained more than the mere respite. Both the probability of recurrence, and of the same in intensity, will be diminished; whereas both will be terribly increased by want of sleep. This is the reason why sleep is so all-important. This is the reason why a patient waked in the early part of his sleep loses, not only his sleep, but his power to sleep. A healthy person who allows himself to sleep during the day will lose his sleep at night. But it is exactly the reverse with the sick, generally; the more they sleep the better they will be able to sleep."

It is very important never to allow oneself to indulge in conversation in a sick-room in which a patient cannot, or is not meant to, participate. "It is rude to whisper." This is one of the maxims we incessantly din into the ears of children. It should be remembered in the sick-room, where whispering is not merely rude, but often positively harmful. Although noise is to be avoided as much as possible, it must be remembered that a certain amount of work *must* be done, and that the performing of it will entail a certain amount of noise. A good nurse will thoroughly make up her mind as to what is necessary to be done, and then, being fully satisfied as to the necessity of action—be it the making up of the fire, the cleaning of the room, the administration of food or medicine, or what not—she will set about her work and perform it *thoroughly, quickly, and with the least amount of noise that is consistent with thoroughness.* An inexperienced nurse will take ten minutes to poke the fire, moving one coal at a time, and inserting the poker between the bars with absurd gentleness. In the end, the fire is not properly made up, the patient is bothered beyond expression by the persistent fidgeting, or perhaps wakes with a start as a big knob of coal falls with a crash into the fender. For merely replenishing the fire, knobs of coal may be placed upon it with the gloved hand; but it is better to make it up thoroughly, and run the risk of half a minute's noise, than to keep up an

undercurrent of disturbance for a quarter of an hour. Never ask a doctor's opinion in the presence of a patient, nor put questions to him as to the treatment advisable to be pursued. All consultations which affect the patient's welfare should be held out of his hearing, and in an adjoining room. To have to deny some proposition may lead to the inference on the part of the patient that he is not so well as he was, and this may cause some needless depression of spirits.

A nurse should never suggest any alteration of treatment without first consulting the medical man in charge. By so doing she may cause much disappointment to the patient, and may loosen that confidence which ought, in the patient's interest, to exist between her and the doctor. A sensible doctor is always willing, or rather glad, to receive any suggestion, or to hear any proposition made by an experienced nurse.

A nurse who is continuously with a patient is very much more likely to know his wants and to understand his troubles than the medical man who only comes occasionally, or, at most, at intervals of some hours; and any medical man who would show any huffiness at receiving a suggestion from a nurse must have "a plentiful lack of wit." If, however, the suggestion made does not find favour with the medical man, the nurse must remember that it is her bounden duty to acquiesce without question in the dictum of her superior officer. Any assertion of her own opinion, in contradiction to that of the doctor's, either to the patient or his friends, is a most unwarrantable thing, and is very likely to be prejudicial to the patient's welfare. Of course it occasionally happens, and always will happen, that a medical man does not understand a case, and that a second opinion or a change of treatment may be essential to the patient's recovery. A good nurse may be the means of unmasking an ignorant man; but she ought to be very sure of her ground, and to be very sure that she is not acting on merely personal reasons, before she breathes a word which may deprive a patient of his medical man, or lessen the confidence which he should have in him. The person who has had the care of a case *from the beginning* is more likely than any other to conduct it satisfactorily to its termination, and any change of treatment or change of doctors, unless really good and sufficient reasons exist for the change, is generally the most unfortunate thing that can happen to a patient.

The same remarks apply also to those well-meaning persons who flit about the world always offering advice to sick people. They have been benefited themselves by some patent medicine, mineral water, watering-place, milk cure, grape cure, movement cure, rubbing, galvanic baths, or the last new fashionable remedy, whatever it may be. Or because Dr. So-and-so has treated them successfully for the gout, they think he must be good for sprained ankles also, and they accordingly come with their recommendations, being well assured, and having no doubt in their own silly heads, that in medicine "What is sauce for the goose must be sauce for the gander also." "Somehow or other," says Miss Nightingale—who alone of all writers on the subject, seems capable of really entering into the feelings of an invalid—"somehow or other, it seems a provision of the universal destinies that every man, woman, and child should consider him, her, or itself privileged especially to advise. Why? That is precisely what I want to know; and this is what I have

to say to them. I have been advised to go to every place extant, in and out of England, to take every kind of exercise by every kind of cart, carriage—yes, and even swing (!) and dumb-bell (!) in existence; to imbibe every different kind of stimulus that has ever been invented; and this when those *best* fitted to know, viz., medical men, after long and close attendance, had declared any journey out of the question, had prohibited any kind of motion whatever, and closely laid down the diet and drink. What would my advisers say, were they the medical attendant, and I, the patient, left their advice and took the casual adviser's? Again," continues the same writer:—

"‘Chattering hopes’ may seem an odd heading. But I really believe there is scarcely a greater worry which invalids have to endure than the incurable hopes of their friends. There is no one practice against which I can speak more strongly from actual personal experience, wide and long, of its effects during sickness, observed both upon others and upon myself. I would appeal most seriously to all friends, visitors, and attendants of the sick to leave off this practice of attempting to cheer the sick by making light of their danger, and by exaggerating their probabilities of recovery.

"Far more now than formerly does the medical attendant tell the truth to the sick who are really desirous to hear it about their own state.

"How intense is the folly, then, to say the least of it, of the friend, be he even a medical man, who thinks that his opinion, given after a cursory observation, will weigh with the patient against the opinion of the medical attendant, given perhaps after years of observation, after using every help to diagnosis afforded by the stethoscope, the examination of the pulse, tongue, &c.; and certainly after much more observation than the friend can possibly have had!"

The kindest thing one can do to a chronic invalid is to try and interest his mind, and give him some sort of small employment. Do not be too officious and too ready to do, or to help to do, all those little things which he can do for himself without injury. Try and lead his thoughts beyond himself, and beyond the dreary limits of his own sick-room. Talk to him, let him know all the humanising gossip of his own neighbourhood; who are engaged to be married; who has got a baby; and do not be afraid to tell him who, like himself, has fallen ill, for it will not do him any harm to think of others, and provided he can be led to forget his own sufferings, it is of comparatively little importance what is the subject upon which his thoughts dwell. Miss Nightingale suggests a pet of some kind as an excellent source of amusement for a sick person. A baby or young child is an endless pleasure to an invalid woman, and in attending to the wants and listening to the prattle of her little companion she will forget her own troubles. A singing bird, which requires to be cleaned and attended to every day, is a capital distraction.

While speaking of the advisability of allowing patients, for their own sakes, to do sundry acts for themselves, there is another aspect of the question which is very delicately touched upon by a writer to whom we have already referred. "I would add," she says, "one general remark on the relations of nurses and male patients. While ready at all times cheerfully and willingly to perform any service, however unpleasant, for a patient who is really helpless, a nurse should be very careful to

discontinue such service the moment it ceases to be absolutely necessary; and also never to allow a patient, through mere shameless laziness, to demand from her any service which a sense of decency should make him perform for himself. It is a matter of very great importance in male wards that the patients should thoroughly respect their nurses. This respect is never endangered by the most ready and cheerful performance of the most unpleasant duties for those who are really helpless, but it will vanish the moment any approach to immodest carelessness on the part of the nurse is detected. And I would remind all nurses that in these points men are instinctively quick and accurate judges."

PRACTICAL DETAILS OF NURSING.

We may now leave these preliminary matters, and proceed to discuss *seriatim* those more practical details, the arrangement of which naturally falls upon the nurse.

Beds.—There is nothing of more importance to a sick man than the nature of the bed upon which he is expected to lie during sickness. We are all agreed that the beds of our ancestors were abominable, and it will be needless for us to waste time or space in decrying the four wooden posts and framework, the heavy hangings, and the bag of feathers which constituted the common bed of all English households before the dawn of the iron age. In these beds stuffiness, vermin, lumps and hollows, were the chief characteristics, and the smell of the hangings—hangings which were often heirlooms—reminded one, perhaps, of all the respectability belonging to antiquity, but it is hardly possible that the inseparable fustiness could be conducive to health.

In country places, even in the present day, old-fashioned people sleep in these beds, and it must be borne in mind that, to a person accustomed to this style of thing, the transference to a modern mattress is often accompanied by loss of sleep, so that we must insist that, unless there be good reasons for a different course, the patient should sleep upon the bed to which he has been accustomed.

If patients are not very ill, and if they are not likely to be in bed for more than a week, or if they are only partially bed-ridden, and are able to sit up for part of the day, then there can be no reason why they should not keep to the bed, whatever kind it may be, to which they are accustomed.

If, however, the patient is likely to be long in bed, if it is evident that the first signs of a prolonged fever have appeared, or if a fractured limb or other serious accident necessitates a long rest, absolutely on the back, then the proper selection of a suitable bed is of the greatest importance, and mere habit or preference must not be allowed to outweigh more serious considerations.

A bed in which a patient is going to spend the whole of his time for some period must have *no hangings*, and, in our opinion, it should have neither valance nor curtains, for the former is merely a shield for cobwebs and dirt, which are less likely to be removed as soon as they accumulate if they be hidden from view, and the latter are only necessary in cases where it is requisite to protect the patient from every draught (as in some cases of consumption).

A bed should not be too wide, but, on the other hand, it should be of such a width that the patient, lying in the middle of it, can be easily reached by the nurse from either side.

The part of the bed which supports the mattress is usually made of iron rods interlaced, and for ordinary purposes there can be nothing better, as it is light, permits a current of air to the under surface of the bed, and is very readily cleaned. If the bed is to be as comfortable as possible, a flock mattress should be placed upon the bars, and upon the top of this another mattress of horsehair, which is a more resilient material, not so hot, and altogether a more pleasant material to lie upon than flock.

A feather bed is a most unwholesome and unsuitable bed for an invalid, and should never be employed except in cases where there is no choice. A very excellent



Fig. 1.—WIRE MATTRESS.

mattress for sick persons is the "*Patent woven wire mattress*" (Fig. 1), which is a strong fabric of wire interwoven in all directions, with plenty of spring in it, and which gives to pressure in every direction. It is most comfortable and clean, and being made of tinned wire does not corrode.

If these mattresses be used, it is usually sufficient to place only one other mattress upon them, or the patient may even lie upon three or four folds of a blanket placed upon the wire mattress.

The bed upon which a patient lies must always be absolutely flat and perfectly smooth. If his head or any part of his body is to be supported, this must be done by means of pillows placed to suit the requirements of the patient, but these accessory pillows must always be placed above the bottom sheet of the bed. If a blanket be placed between the mattress and the bottom sheet, it is necessary to take great care that no wrinkles or inequalities are left in it.

The bottom sheet must always be protected as far as possible from everything that is likely to soil it, since it may be very undesirable to subject a weak patient to the fatigue, annoyance, and excitement of changing the sheets oftener than is absolutely necessary. This is done by means of "*draw-sheets*," which are placed under the middle of a patient, or under any part of his body from which any discharge is issuing or likely to issue. Draw-sheets are made of old sheeting doubled and sewn together. The size will depend upon the requirements of the case, but it is better not to have them too small. In some cases it is necessary to put a piece of mackintosh beneath the draw-sheet, but this should be avoided if possible, as it is apt to prove too hot for the patient. The ends of the draw-sheet should be tucked under the mattress on either side, and great care should be taken that it, as well as the sheet beneath it, is absolutely free from inequalities. The draw-sheet should be removed as often as it becomes soiled. The thankfulness of a patient suffering from acute illness, if only he be kept perfectly clean, cannot be over-estimated.

It is not always very easy to change a draw-sheet if it be under the patient's middle, and he is heavy and helpless. To effect this, two people are required, and often no small amount of strength is necessary. While one raises the patient's body,

the other should take the clean draw-sheet, half rolled up, to the side of the patient's body opposite to that on which the first nurse is standing, and taking the free edge of the soiled draw-sheet and rolling it up, should *push* it away from under the patient's body at the same time that she slips the clean one into proper position. A patient can often render great assistance to his nurses, and every bed should be furnished with a rope hanging above it, furnished with a transverse handle, which the patient may catch hold of, and so raise himself slightly off the bed as these necessary manipulations are accomplished. A good substitute for the rope and handle is a jack-towel fastened to the bed-rail at the foot of the bed.

The upper clothing of the bed should not be too heavy, but it is not necessary to give directions on a matter which may be left to the common sense of the nurse. If the weather be cold, additional blankets beneath the counterpane should be added. It is a dirty plan to throw plaids, railway rugs, and heavy coats, &c., which have probably never been washed, across the bed.

To change the bottom sheet for a helpless patient is an operation which demands some little skill from the nurse. The clean sheet should first be thoroughly aired, and should then be rolled up without folding. The patient should then sit up in bed, or, if necessary, be propped up. The sheet to be removed should then be freed from the bolster and the head of the bed, and should be rolled up under the patient's back. This being done, the clean sheet should be partially unrolled, and the free end made fast under the bolster, and should then be rolled downwards under the patient's back until the rolls of the clean and dirty sheet lie parallel to each other under the patient's back. Now comes the tug of war, and the whole difficulty lies in passing the two sheets beneath the buttocks of the patient. Usually he is able to raise his body slightly by his own efforts with the help of the rope hung over the bed; and if the patient have ever so little power, it is astonishing what can be done by perseveringly inserting the hand beneath the back, and persistently rolling up one sheet and unrolling the other. If the patient is very helpless, it is necessary to have assistance; and if the patient be very heavy, one person to lift him and two others to manipulate the sheet will be found essential.

Since changing the bed-clothes is often a great effort to a patient, every possible care must be taken to keep them as clean as possible, so that the necessity may not arise at too frequent intervals. Directly, however, the necessity does arise, there must be no hesitation, and a patient must not be permitted on any account to remain on a sheet which is either damp or soiled. When a patient is fed, the bed-clothes must be carefully protected, and all crumbs must be diligently searched for and removed with scrupulous care.

In many cases of fever, and especially in typhoid fever, it is advisable *to change the bed every day*, and this can be done without any exertion on the part of the patient. The two beds must be brought alongside of each other, and the one into which the patient is going to be moved must be carefully made, aired, and the upper clothing turned back over the bottom rail. All the clothing, except the blanket, must then be removed from the patient's bed. The borders of the patient's bottom sheet should then be rolled inwards towards the patient, so as to afford a firm grasp to the two assistants who are to do the lifting. These two lifters must stand, the

one on the edge of the patient's bed and the other on the bed into which he is to be moved. In this position they will be able to exert all their strength towards the desired object. A third person must take charge of the patient's head, and must stand behind the head-rails of the beds (the beds being moved away from the wall prior to the process of shifting). If the patient have a broken leg or any local injury, a fourth person will be required, to take charge of the injured part. Thus it will be seen that three persons at least, and possibly four, are necessary for the safe shifting of a patient from one bed to another. All arrangements must be made before the operation is begun, and great care should be taken that each person fully understands his share of the work, and the patient must on no account be harassed by discussion and loud talking. All being in readiness, and the under sheet rolled up, the lifters

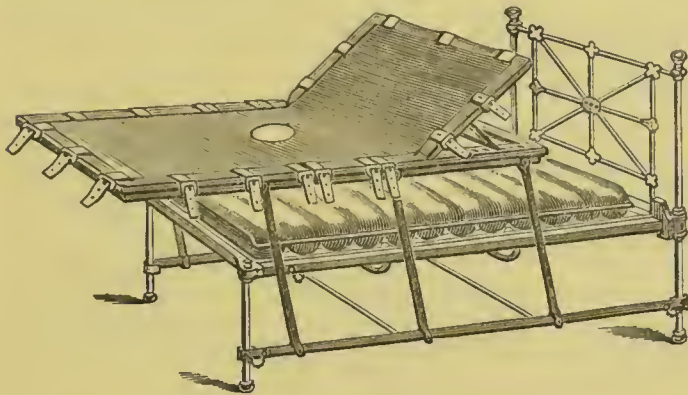


Fig. 2.—LIFT AND RACK BEDSTEAD.

Bedsteads should be provided with foot-boards. They are always a great comfort, as without them patients are very apt to slip down in bed, and to get their legs over the end. It is convenient to have the foot-board movable, especially in cases of injury to the lower extremities.

Invalid Beds.—We have shown in Fig. 2 a bedstead which the inventor calls his "*Patent Lift and Rack Bedstead*," which is as simple as it is ingenious in construction, and is said to be a great boon to patients who are helpless and paralysed. This piece of apparatus is due to the ingenuity of Mr. William Denne, medical superintendent of the Three Counties' Asylum, Arlesey, and the advantage claimed for this invention is that "the patient may be easily raised, the bed made, the stool used, and the necessary ablutions performed, and again lowered on the bed, without the slightest fatigue."

The water-bed, which we owe to the ingenuity of Dr. Neil Arnott, is an invaluable contrivance in cases where the patient is very weak and unable to bear the slightest pressure on the body. The old-fashioned water-bed was a tank upon

(having removed their shoes) mount on the bed, and then, at the word "now" from the person in charge of the head, all lift together, and the change is effected without difficulty. The patient is thus lifted in the sheet, and the sheet is easily removed from under him by the process of rolling described for the removal of bottom sheets and of draw-sheets.



Fig. 3.—METHOD OF FILLING A WATER-PILLOW.

wheels with a cover of mackintosh, upon which the patient lay. Its great merit was that of equalising pressure, so that the pressure being equally distributed over every part of the patient's body, it did not fall with undue severity upon any one part. Large water-mattresses are now manufactured which are, for all ordinary purposes, quite as effectual as Arnott's bed. The accompanying figure (Fig. 4) shows an ordinary full-sized water-mattress applied to an ordinary bedstead. This mattress, as well as all similar articles, can be inflated with air instead of being filled with water, if it be thought desirable. For cases of utterly helpless bed-ridden invalids, a water-mattress has been devised with a central tube (Fig. 5), so that all moisture can be readily conveyed away. In those very distressing cases in which the patient is utterly inattentive to the calls of nature, such a contrivance is really a very great boon.

Invalid Cushions.—Happily, it is only rarely that a complete water-bed or a full-

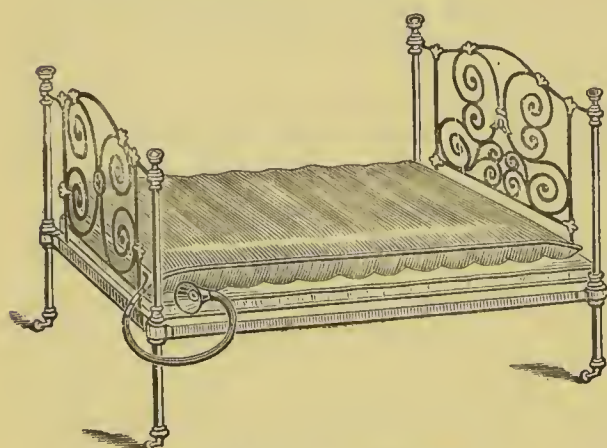


Fig. 4.—WATER OR AIR MATTRESS.

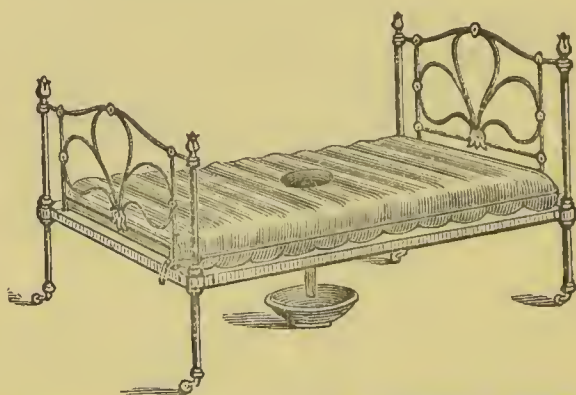


Fig. 5.—BEDSTEAD WITH MATTRESS AND CENTRAL TUBES.

sized water-mattress is necessary. A water-cushion, for the support of the part affected, is usually all that is required. The advantage of a water-cushion over an ordinary one lies in the fact that it never gets into wrinkles, that the support which it affords is always equable and not lumpy, and that it is easily cleaned. A water-cushion can be filled to any extent, so as to be quite tense, or soft and flabby; they can be put into position too, and filled to the requisite amount afterwards (Fig. 3); and, lastly, they

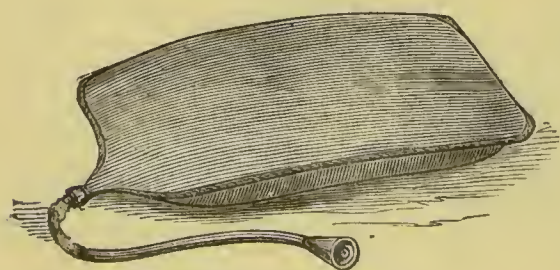


Fig. 6.—AIR PILLOW.

can be filled either with hot or cold water, according to the requirements of the patient. Water-pillows are now happily among the common articles of domestic use, and they can be usually obtained in remote country districts without difficulty. The annexed figures (Figs. 3 and 6) show an ordinary air or water-cushion, and the method of filling it after it is *in situ*. It is advisable generally to add

a little air to the water, so that after it has been partially filled, a little air should be blown in by the mouth.

The temperature of these pillows can be regulated to a nicety, and by drawing off a little cold water and adding more hot any degree of heat which may be thought

desirable may be obtained. Before introducing a pillow under a patient it should be slightly distended with water.

The pillows, cushions, and mattresses which we have been describing are warranted to stand any temperature, from zero to 212° Fahrenheit, which latter is far above anything which could possibly be needed, or which, indeed, could be used with safety. Water-cushions must be treated with care, but if they be so treated they are very durable. The one thing which seems fatal to them is neglect, and if they be put away and are folded up, and allowed to get dry and hard, they will inevitably be spoilt. *They must be very carefully protected from grease*, since oil, in any form, dissolves the material of which they are made, and inevitably destroys the pillow. A water-cushion must never be placed near a part to which ointment is being applied, and if they be put under the head the patient should forego the luxury of pomatum, or hair-grease of any kind. For their proper protection they should be covered with flannel, and if they be placed under a patient's body, a blanket should be put over them so as to completely cover every part of the cushion. If this be not done, the patient is very apt, while having his meals, to bring his fingers in contact with the cushion, and if, as is generally the case, the fingers be soiled with a speck of butter or any other greasy material, the destruction of the pillow is the consequence. The writer of this paper remembers very well how the rapid decay of the water-beds and pillows in one of the large London hospitals was eventually traced to this very cause—contact of buttery fingers with india-rubber—and the simple precaution of carefully protecting the edges of the pillows resulted in a considerable saving to the institution.

Bed-sores inevitably result when a patient, weakened by disease, is compelled to lie for long together in one position. *They are a disgrace to a nurse*, and whenever a bed-sore occurs the nurse should question herself very closely as to whether or no it is in any way attributable to neglect or want of knowledge on her part. A bed-sore can usually be prevented by proper attention on the part of the nurse; and a nurse should always bear in mind that they are much easier to prevent than to cure, and that the occurrence of a bed-sore on her patient will not only lay her open to the suspicion of neglect, but will certainly increase her labours by an incalculable amount. It is right to add that bed-sores are not in every case preventible, and perhaps in some cases of *fracture of the spine* no amount of skill and attention on the part of the nurse will serve to avert so untoward an occurrence; but the experience of surgeons certainly is universally the same, that the number of bed-sores under the care of different nurses varies immensely.

What is a bed-sore?—A bed-sore is a sloughing or mortification of the skin, due to pressure. If a healthy man were fixed in one position in bed without the possibility of moving he would get bed-sores very quickly; but since in health we are almost constantly and unconsciously shifting our position, such an accident could never possibly occur. Now, it must be remembered that in sickness we get *immobility* from *weakness*, and the constant pressure, coupled with great feebleness of circulation, is not slow to bring about the mortification of the part pressed on. Even in disease, when the patient is reduced to a state of extreme prostration, he is happily strong enough to fret and to complain, and the

most constant request, perhaps, which a sick man makes is to have his position altered, and if the nurse attends patiently to his requests she will be doing much towards the prevention of bed-sores. Again, the thinner a patient is, the more likely is he to have bed-sores over the projecting points of his bones from the squeezing of the skin between the hard pillow without and the harder bone within; which without the intervention of any soft padding of fat soon determines its sloughing and destruction. We may derive some profit from considering the condition of things which occurs in fracture of the spine, which, of all accidents and disasters to which our body is liable, is the one in which bed-sores are most likely to occur. Now, a man who has his spinal column fractured (say in the middle of the back) *loses all power of motion and sensation in the parts below the injury*. Having lost the power of *motion* he is unable to shift his position for himself; and having lost *sensation* he is unconscious of the pain which constant pressure produces; and, unlike the ordinary invalid, and being "dead from the waist down," he thinks not of his lower limbs, and does not *ask* to have his position in bed altered for him. It is the duty of the nurse in these distressing cases to *think and feel* constantly for her patient, and to remember to shift his position in bed constantly, whether he ask or no.

All bed-ridden patients who are compelled to use the bed-pan and the bed-bottle are put at a great disadvantage as regards cleanliness, and it must be constantly borne in mind by the nurse that nothing is so sure to cause a bed-sore as any inattention to the absolute cleanliness of her patient. A sick person must be kept as clean as a baby, and whenever the bowels are acted upon the parts must be thoroughly cleaned with a sponge (and warm soap and water if necessary), dried with a soft towel or an old silk handkerchief, and powdered. To think of a patient lying on a bed moist with irritating urine, or with his body fouled with its own discharges, is too horrible, and the good nurse will be constant and unremitting in her attention to these things.

Now the patient with fractured spine who has neither motion nor sensation in the lower half of his body is unconscious of the calls of nature. His bowels act and his urine passes from him without any knowledge on his part, and consequently, in addition to the constant pressure to which his body is subjected, we have to contend with the evil of constant soaking in urine and liquid fæces. "The skin of the patient's nates (buttocks)," says a medical writer, "becomes sodden and macerated, the irritating fluid acting upon his tissues like a caustic." We are obliged to speak of these matters plainly, because the prevention of bed-sore is one of the most important duties of a nurse; and since we are enlisting in the ranks of nurses women of more refined culture than formerly was the case, we think it right that they should understand how disgusting and how indelicate their duties may at times become. We do not use these strong terms from any feeling that ladies and women of superior education are unfit for the duties of nursing, nor do we for an instant think that a woman who performs these unpleasant offices from a high sense of duty or philanthropy is guilty of the least indelicacy; but we have often heard the complaint from surgeons that the "high-class nurse" of the present day is not always so careful in these matters as she might be; nor is it to be wondered at that a woman of good education and refined habits of thought should shrink from performing these unpleasant duties for

the first rough man (for in hospitals there can be no selection of patients) who may be placed under her care. For those who do perform those duties we have the greatest respect, but all who are contemplating the adoption of nursing *as a profession* should ask themselves if they are so constituted as to be able to take all the necessary steps for the prevention of a bed-sore in the first navy or costermonger who may require their services.

The old-fashioned nurse—the strong muscular woman of the lower classes—was often a person who was not so black as she is sometimes painted. She not unfrequently took a great pride in the cases under her care, and looked upon a bed-sore as something which affected her personal honour and reputation. She was often rough, no doubt, but then she was ready also, and being accustomed to hard and dirty work from her youth up, and being taken from the same class as the majority of the patients who came under her care, she was never squeamish at her duties, and consequently never hesitated for an instant in the thorough performance of those very unpleasant offices which it must of course fall to the lot of every nurse occasionally to perform.

For the *prevention of bed-sores* the first requisite is cleanliness, and whenever the necessity arises, the draw-sheet must be changed, and, if it be found necessary, the under-sheet and blanket also. Whenever the patient uses the bed-pan he must himself be thoroughly washed and dried as perfectly as possible by the nurse, since these are matters which a bed-ridden patient can seldom manage for himself.

If the case be one in which there is much dribbling of urine, it may be necessary to supply the patient with an india-rubber urinal which he must wear constantly. A urinal is simply an india-rubber bag which fastens round the waist, and receives the urine directly it is passed. They are made for either sex. A urinal must be kept scrupulously clean, and must be thoroughly washed out at least once a day, or it will soon become unbearably offensive. If it is found that ordinary washing is not sufficient to keep the apparatus sweet, a rinsing with a solution of quinine (of the strength of two grains to the ounce of water) will be found very efficient. If a urinal cannot be obtained, some good may be effected by placing a large sponge between the patient's legs, which will soak up a good deal of the moisture. If a sponge cannot be got, a big handful of tow or cotton waste, or even an old towel, will be better than nothing. If a sponge is used, it must be frequently washed and wrung out of boiling water; and if a lump of tow be employed, it must be destroyed as often as it is changed.



Fig. 7.—TUBE SHEET.

Some of the water-beds are made with a central tube, such as we give an example of in Fig. 7, in order that the discharges and moisture may drain away; or, failing this, an ordinary mattress may very easily have a hole made in its centre through which a tube connected with a water-proof sheet may pass.

None of these appliances for the artificial drainage of a patient are altogether

trustworthy, and even the best of them cannot replace that unremitting attention which in these cases is so absolutely necessary. Cleanliness being, as far as possible, insured, the next point is to relieve all points upon which the body rests from pressure. Bed-sores are most common upon the most prominent points, and such as the bottom of the spine or sacrum, and upon this spot it is that bed-sores generally make their appearance. Bed-sores also occur upon the hip-bones and on the heels, and occasionally abscesses will form on the back of the shoulder-blades from the pressure at this spot.

It is advised by many to rub the skin over these prominent parts with spirit, and it is the custom of many nurses to apply either spirits of wine or brandy. The effect of this is, it is said, to harden the skin. Possibly it may do so—it may, at least, be regarded as a cleansing process. Painting the part with collodion is sometimes resorted to, and there can be no doubt that the fine film thus left upon the skin serves as a protective.

The patient's position must be constantly shifted, and when he is perfectly helpless, as in cases of fracture of the spine, a good nurse will turn a patient in bed at regular intervals by the clock. If a patient lie for three hours on one hip, and then three hours on the other, changing every three hours during the day and night, the result will be far different to that which would have resulted had he spent twelve hours at a stretch on either hip. This constant and painstaking alternation of the pressure has saved many a life.

In those cases in which it is possible, a patient may be turned completely on the face; and when this can be done, there should be no possibility of the occurrence of a bed-sore.

A nurse should be well acquainted with the earliest indications of the occurrence of a bed-sore. The skin over the part (and this is usually over the prominence of a bone) begins to look pale, mottled, and sodden. This is quickly followed by the mortification of the patch of skin. Seeing this condition of things, it is necessary to take prompt steps for the protection of the dangerous patch. The pressure may be taken off in the same way as the pressure is taken off a corn, by the ordinary thick corn plaster, made of a circle of felt. Several thicknesses of lint, or some lint having flannel between its folds, or a pad of lint lined with cotton wool, may be taken, and from its centre should be removed a portion slightly larger than the piece of skin which it is sought to protect. Upon this protective pad, which will have to be retained in its place by a few turns of a bandage, the patient must lie, and in this way the doubtful patch of skin may eventually be enabled to recover its vitality.

India-rubber cushions are now made in various shapes, which serve admirably to take off the pressure from any part of the body. Thus they may be obtained circular, which is the most generally useful shape, and serves to protect almost any part of the body (Fig. 8). The Horse-shoe Cushion (Fig. 9) is especially useful for the protection of the sacrum or lower part of the spinal column, which is the region of all others the most liable to suffer from bed-sore. The "Spinal Water or Air Cushion" (shown in Fig. 10) is of very great service in those cases where, owing to an extreme degree of emaciation, the patient is unable to stand the

least pressure upon the prominences of the upper parts of the spinal column. It consists really of two cushions joined down the centre, so that the body lies upon a double air-pad, while a gutter or channel is left between them to receive the prominent spinal column. These cushions are very much to be preferred to any kind of pad made with

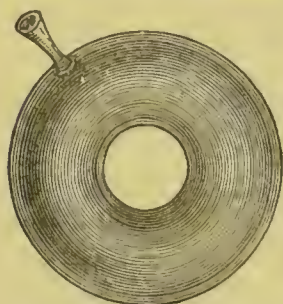


Fig. 8.—CIRCULAR WATER OR AIR CUSHION.

lint or other material of a similar kind, and for this reason, that they do not absorb discharges or other fluids, and can be very readily and completely cleaned. They also have this advantage, that they can be filled with either hot or cold water, according to the wish of the patient or

the requirements of the case. A mixture of air and water is, however, on the whole, the best “stuffing” which can be employed.

When once the sore is formed it requires other treatment besides the mere relief from pressure. While the wound is very small, painting the skin with collodion is sometimes of service; but such treatment is of no use when it has attained any size, for then

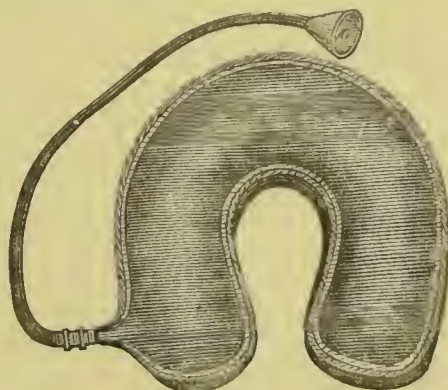


Fig. 9.
HORSE-SHOE WATER OR AIR CUSHION.

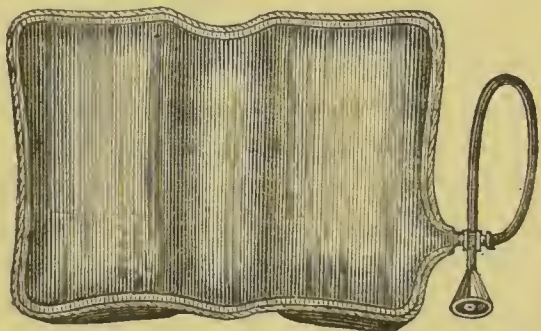


Fig. 10.—DOUBLE OBLONG WATER OR AIR CUSHION.

“It will but skin and film the ulcerous place,
Whiles rank corruption, mining all within,
Infects unseen.”

A sore having once formed, the separation of the slough (the piece of dead skin) is to be encouraged in every way. It is customary with most medical men to apply a poultice until this has been accomplished. If the patient can be turned either on his side or face he should be put in this position, with the bed-sore uppermost, while the poultice remains applied. Poultices, if used, must be frequently changed, for when the warm and moist linseed becomes imbued with the discharges from the wound it invariably becomes intolerably offensive in a very short time.

Cleanliness essential.—Certainly the chief point in the treatment of a bed-sore is to keep the part sweet and free from decomposition, for if that be not done the patient will be in great danger of being killed by blood-poisoning. It is too often the case, when sores become offensive, to apply remedies rather to the air of the room than to the patient, and it is not uncommon to find a sick-room reeking with carbolic acid, chloride of lime, pastilles, incense, eau de cologne, &c.; and when we encounter these attempts to smother unwholesome smells by others more powerful (for it is more than doubtful if these sprinklings and fumings are of any use), we always suspect that the nursing and the treatment is really at fault, for if this were not so the occasion for the use of these masking odours would not arise. For the keeping of a wound or sore sweet,

the point which demands primary and minute attention is cleanliness. It must be washed and cleaned daily with the most scrupulous care, and if necessary, twice or thrice in the day. The helpless patient must never be allowed to lie in the discharges which flow from his wound, and the nurse should never shrink from the trouble of changing the linen as often as it becomes fouled. Cleanliness and care are the first and best of disinfectants, and other disinfectants which may be used are only to be regarded as auxiliary to these.

Disinfectants should be applied to the wound itself. These, however, should not be of an irritating character, or they may tend to increase the size of the wound which it is sought to heal, and thus do harm instead of good. One of the disinfectants which at present holds a high place in the estimation of the medical profession is boracic acid—the acid which is extracted from borax. Lint impregnated with this acid, and which is known as “boracic acid lint,” is sold by many druggists, and if a piece of this be cut the size of the sore and kept constantly applied (having been previously moistened with water), it will be found very effectual in preventing decomposition and keeping the part wholesome. *Oakum*, the ordinary teased yarn impregnated with pitch, is a very agreeable application to bed-sores, as it combines antiseptic properties with some power of absorption and no little springiness, so that when made into a pad the patient may lie upon it without danger of undue pressure. All greasy applications are favourable for bed-sores; and they are, in our opinion, preferable to moist ones, which must tend to encourage decomposition. If nothing else is at hand, the part may be kept covered with a piece of lint or soft linen rag, upon which common lard or cold cream may be smeared. An antiseptic ointment, prepared with some common unirritating antiseptic, as boracic acid or carbolic acid (very weak), will be found a most excellent application. The great merit of greasy applications is that they do not absorb moisture. They must, however, be frequently changed, and whenever they are changed the part must be most thoroughly cleansed. Whatever is used to clean a bed-sore, or indeed any sore, should be burnt when done with, so that old rag or a bit of tow is the best material for the purpose. Sponges ought never to be employed, because the pores of the sponge become soaked with the discharge of the wound, which readily putrefies. The wound should be washed with warm water, to which a little Condyl's Fluid or permanganate of potash has been added. The fluid should be projected with some force on the surface of the wound from a glass syringe, and in this way the discharges from the surface will be dislodged. While washing a wound in this way, it is needless to say that great care must be taken to ensure that the effluent liquid does not fall into the bed. This, however, may usually be prevented without much difficulty by pressing the edge of an ordinary tin bowl against the skin, and placing the patient in such a position that the water may run into it. If sticking plaster has been employed to retain in position any of the dressings or applications which have been made to the sore, it is very essential to cleanse the edges of the sore of all pieces of plaster which may adhere to it. This cannot be done by means of water, or even soap and water, for the plaster is not soluble in such fluids. The best solvent is turpentine or olive oil; but while using the former, care must be taken not to touch the surface of the wound with it, and to wash the surrounding skin very carefully with warm soap and water, so as to

remove all traces of the turpentine, which, if left adhering, might prove irritating or too stimulating. When the slough has separated from the surface of a bed-sore it must be treated just like any other sore place or granulating wound. It must be kept clean, and should be dressed two or three times a day with some slightly stimulating application, as zinc lotion, zinc ointment, or even common resin ointment, than which nothing is better. The dressing must always be cut the exact size of the sore, and if the sore is healing satisfactorily it will require to be made smaller and smaller each day.

While treating of bed-sores we have had frequent occasion to dwell upon the great importance of cleanliness, and this leads us to speak of *bed-pans*. Bed-pans should be of white earthenware—white, because the fact of cleanliness or otherwise is most easily noticed on a white ground, and earthenware, because it is a material which cannot be corroded by any acrid fluids, and can be kept in a state of absolute and perfect sweetness.

The best bed-pan for ordinary use is the common, well-known round pan with the in-curved rounded border and the hollow handle, through which all fluids can be poured off (Fig. 11). It is sometimes necessary to pad the border of the pan, or cover it with flannel, on account of the inability of the patient to bear the coldness or the hardness of the earthenware. When this is necessary, two such covers should be made for the pan, in order that one of them may be always clean. It is sometimes necessary

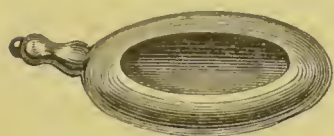


Fig. 11.—BED-PAN.

and advisable to grease the edge of the pan before it is placed under a patient, so that it may slip into position with greater ease, and without risk of bruising the skin.

After the bed-pan has been used the nurse should always be certain that the bed has not been fouled, and that the patient is thoroughly and properly cleansed.

In some cases it may be essential for the safety of the patient that the stools should be kept for the inspection of the medical attendant. When this is the case, it is seldom allowable to place any disinfectant in the pan—at least, this should not be done without first consulting the doctor. Every bed-pan should be provided with a cover, and a stopper for the handle. The cover should be of earthenware or metal, so that it may be thoroughly and properly washed. The wooden covers, with which some of the old-fashioned “night-commodes” are provided, are not to be tolerated. When the stools which have to be kept for inspection are liquid, they must not in any way be meddled with; but when the stools are solid any liquid (urine) which may be passed with them should at once be poured off, the solid portion being alone retained. If this be done, it will be found that the stool is far less offensive than otherwise is the case. A stool which has to be kept should be *immediately* removed from the sick-room to an adjoining closet, or even outside the house, where they should be covered up and corked to await inspection. If the case is one in which the inspection of the stools is not an important matter, it is a great comfort to the patient and to those about him if some deodorising disinfectant be first placed in the pan. The most suitable for such a purpose are “chloralum” or Burnett’s Fluid (solution of chloride of zinc), which being themselves inexpensive and odourless, are

nevertheless powerful deodorisers. If these are not at hand, carbolic acid should be used.

When an evacuation is thrown away, it may generally be thrown down the ordinary water-closet, but in cases of typhoid or other fever this practice should not be resorted to. In these cases the stools should be first disinfected by the addition of strong carbolic acid, and they should then be buried in some spot remote from wells or water-courses. In all cases of fever the safe bestowal of the stools in some spot where there is no risk of infecting others is a duty which we owe to our neighbours.

Some nurses prefer the "slipper bed-pan," of which we here give an illustration (Fig. 12). It certainly has this advantage, that it is easily slipped under a patient, either from the front, or behind, or laterally; but for ordinary purposes it will not be found so generally useful as the circular varieties.

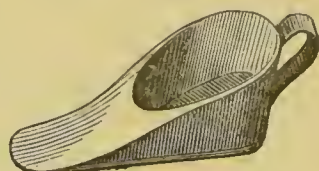


Fig. 12.—BED SLIPPER.

Urine bottles are also a great comfort to invalids, and they are only of second importance to bed-pans. They are wide-mouthed, big earthenware bottles, with one flattened side, upon which they rest without fear of being overturned. The patient can use them almost without disarranging the bed-clothes, and, with a little care, absolutely without risk of wetting them. It is important to bear in mind that these bottles should be *emptied and washed* directly they have been used. It is very undesirable to allow a utensil filled with urine to remain either under or by the side of a patient's bed. This fault is often committed, but it is always a sign of negligence on the part of the nurse.

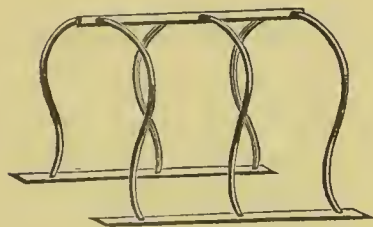


Fig. 13.—BED FRAME.

Bed-frames.—It is often necessary to keep the upper bed-clothes well off the patient. In cases of broken legs, or in any other condition where the legs are immovable, it is always advisable to prevent the sheets from resting on the tips of the toes. In cases of severe inflammation of the bowels (*peritonitis*), and in all cases of wound or operation in the region of the abdomen or groin, it is likewise necessary to relieve the part from the weight of the clothing. This is managed without difficulty by means of the ordinary bed-frame (Fig. 13), which is a very simple contrivance, and one which, in cases of necessity, can be very readily extemporised by any carpenter of ordinary intelligence.

It is sometimes not advisable to place a bed-frame in the bed with the patient. When this is the case, a patent bed-frame can be obtained, which supports the clothing from the outside by means of slings and clips.

Whenever a bed-frame or any similar contrivance is employed, great care should be exercised that the patient's body does not get chilled by draught. He should be closely covered with a blanket down to the point where the cradle commences.

Sometimes it is advisable not only to protect a limb from the superincumbent clothing, but also to protect it from the pressure of the clothing beneath. This is necessary in many cases of fractured limbs, and it is necessary also in those cases in which bed-sores form on the prominence of the heels. A leg may be swung by means of an ordinary cradle and a few turns of a wide, smooth bandage; but, if it be

obtainable, the best piece of apparatus for such a purpose is that known as *Salter's Swing* (Fig. 15), which permits of movement in four directions.

Bed-curtains are scarcely ever admissible in the sick-room; but during the summer something like the gauze mosquito curtains, which must be familiar to all travellers in the south of Europe, will serve to protect the invalid from the attacks of flies and midges, which are often very harassing to a sick person, and effectually

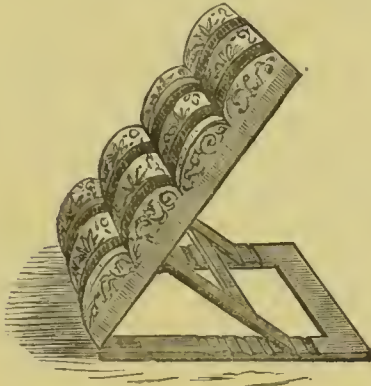


Fig. 14.—BACK-REST.

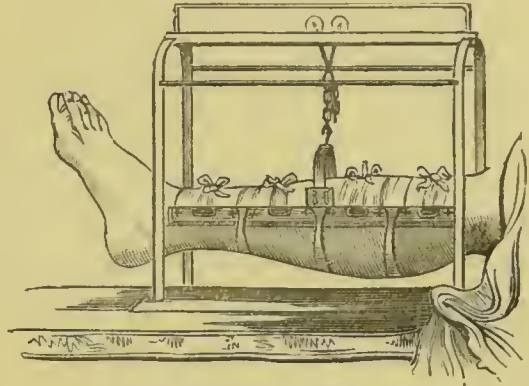


Fig. 15.—SALTER'S SWING.

prevent sleep. A piece of gauze netting merely thrown over the head is often a sufficient protection.

It is a great relief to a patient to be able to change his position in bed, and especially to alter the angle of his body. This is of course effected by means of pillows; and pillows of all sizes and shapes, and of various degrees of hardness, will be found invaluable. Whatever kinds of pillow are used, they should all be covered with ordinary white pillow-cases, which easily show dirt and stains, and which can be washed without any extraordinary trouble or expense. It is not uncommon to

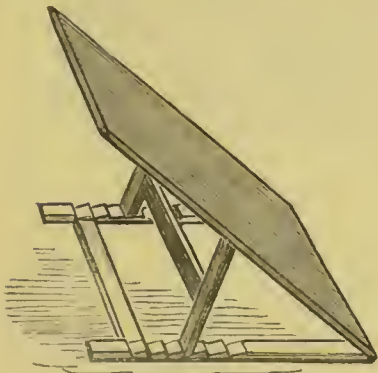


Fig. 16.—BED REST.

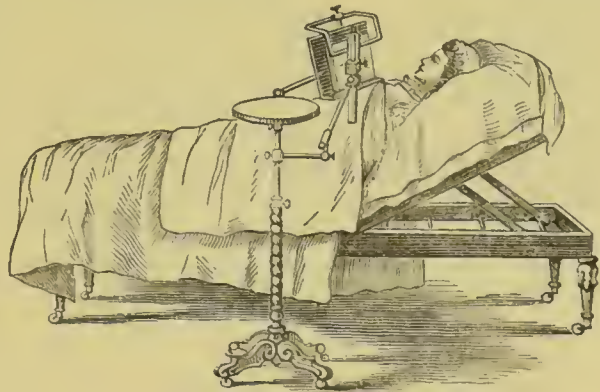


Fig. 17.—“LITERARY MACHINE.”

see a patient sitting up in bed with his body supported by any odd pillows which can be pressed into the service from conches, chairs, ottomans, and the like, and covered in various coloured chintzes, worsted work, or other similar materials. These pillows are scarcely ever washed, and should not be employed for the purpose of supporting an invalid in bed before they have been properly provided with suitable white covers.

Bed-rests.—The ordinary bed-rests or back-rests, such as are shown in the

annexed figures (*see* Figs. 14, 16), are a great convenience and comfort to invalids, as by their help they can be sustained at any angle in bed without feeling any fatigue whatever.

A very fair bed-rest may be extemporised by means of an ordinary light bed-room chair, which must be so placed that the back and rails shall be under the patient's back, while the front legs project over the end of the bed.

Among these may be mentioned the so-called "literary machine" (Fig. 17), which is a small reading-desk so arranged that it can be placed at any angle and in any position, so that a person who is even condemned to lie quite on his back may still be able to enjoy the pleasures of literature.

These appliances need no detailed description. The annexed figures will at once show their mode of use, and the purposes they are intended to fulfil.

Bed-tables, upon which patients' dinners may be placed, or which they may use either for reading or writing, are to be had in great variety. Of these we give a couple of wood-cuts (*see* Figs. 18, 19). One is designed to stand upon the bed, the legs being placed on either side of the patient's knees. A good variety of this sort is to be had in which the top can be placed at any angle, and which is provided with a drawer and lock and key, which would prove an amusement, if not of real utility, to an invalid.

The other form of bed-table is so constructed that it projects across a bed without touching it, which is a very great convenience in those cases in which it is impossible



Fig. 18.—BED TABLE.

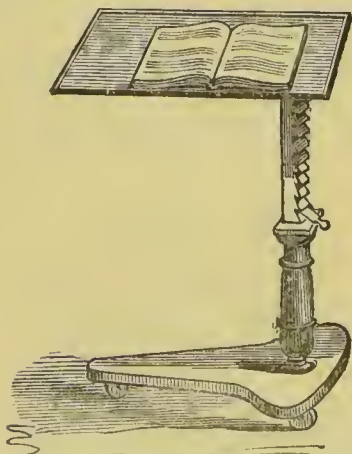


Fig. 19.—BED TABLE (WITH RACK).

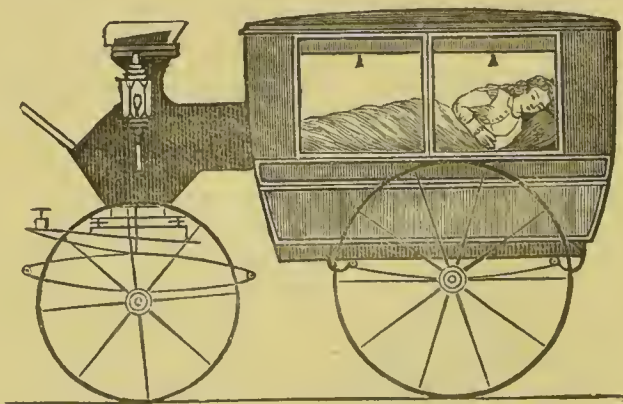


Fig. 20.—INVALID CARRIAGE.

to place furniture upon the bed. It is often a great blessing to be able to get these articles ready made and at a moment's notice, but they are so simple in construction and so easy to comprehend that any village carpenter would find but little difficulty in manufacturing something which at least would answer the purpose.

Invalid carriages.—The transportation of a patient from place to place is generally a formidable proceeding, but one which it is very often essential to undertake. If a patient is too weak to sit up, he must be moved bodily in his bed. Invalid carriages are now made, in external appearance like an omnibus (Fig. 20), which take a person lying at full length without any difficulty. These may be placed upon a railway truck, and in this way an invalid may be carried

almost any distance without serious fatigue. All railway companies are in the habit of keeping saloon carriages on purpose for invalids, provided with beds and every convenience for a long journey.

There is nothing better for moving an invalid than a hammock (Fig. 21). If a real hammock is not to be obtained, there is generally but little trouble in getting one made. There is no jarring in a hammock, and it can be fastened up in an ordinary omnibus or common saloon railway carriage without any difficulty.



Fig. 21.—HAMMOCK.

very small space, and consequently do not form an inconvenient addition to one's luggage. The handles are so placed that they are at a convenient height for going up and coming down-stairs without tilting the patient at an angle which would cause him either danger or alarm.

Two persons may carry an invalid in their arms with very little difficulty. They should interlace their hands by clasping each other's wrists, and this will form an excellent seat upon which the patient may sit, and support himself by placing his own hands round the necks or on the shoulders of his carriers. Or the carriers may use two hands to afford a seat and the other two to support the back of the patient.

With regard to Bath chairs it is needless to speak, as they are almost to be reckoned as pieces of domestic furniture. They are of every possible form, and suited for every conceivable contingency. They are, however, very expensive, and for persons of slender means the twenty or thirty pounds which is often asked for a Bath chair is a serious matter. We show in Fig. 23 a basket-work chair made like an ordinary perambulator, which is scarcely a quarter the price of the more elaborately-finished and elegant chairs, but answers nearly every purpose quite as well.

Chairs in which a patient can propel himself are a great luxury, and the pleasure which the convalescent feels in wheeling himself about a house or garden after a

If a patient is able to sit up, he may make use of the carrying chair, which we have shown in Fig. 22. These chairs are very light and strong, and are so ingeniously constructed that they pack into a

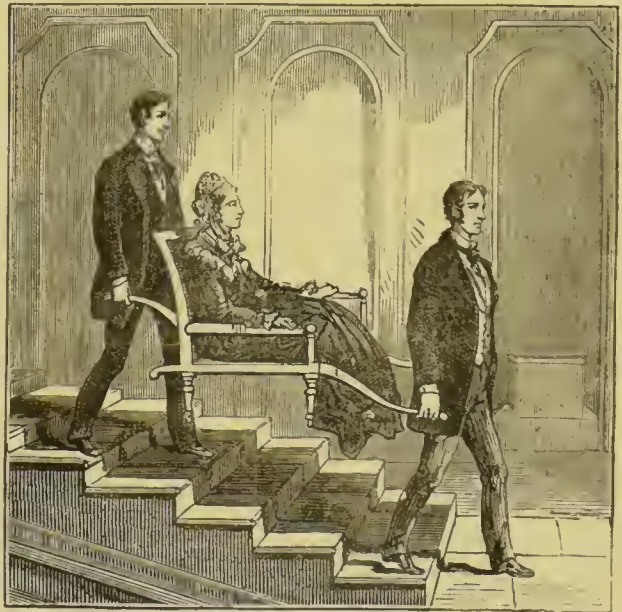


Fig. 22.—CARRYING CHAIR.

prolonged confinement in bed is naturally very great. These self-propelling chairs are of two kinds. The so-called Merlin chair (Fig. 24) has two driving wheels and a guiding wheel, and each driving wheel has a propelling rail fixed to it upon which the patient can exert the necessary force. The other form of chair differs from the Merlin chair in this, that it is worked by a couple of rotating levers attached to the arms which are connected with endless screws, by means of which the propelling wheels are set in motion (Fig. 25).

Moving a patient.—Although we have had much to say about the bed into which

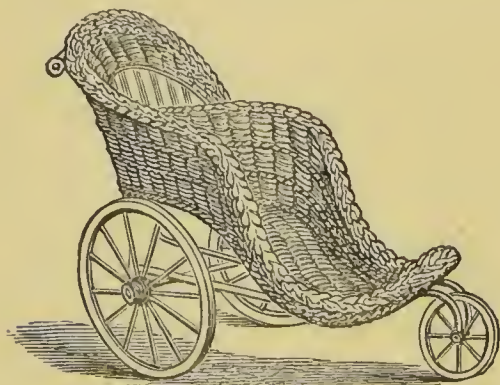


Fig. 23.—WICKER CHAIR.

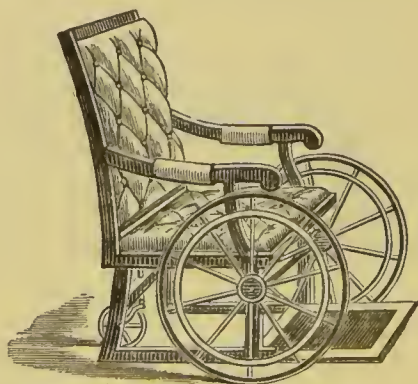


Fig. 24.—MERLIN CHAIR.

a patient is to be put, and the care to be taken of him when he is there, we have as yet been silent on the important point of putting him into bed in the first instance, which, in the case of broken limbs, is a very serious and difficult matter.

In the case of a broken leg or thigh, the less that is done to a patient previous to the arrival on the scene of some skilled person the better. Any rough or ignorant handling may have the result of causing the end of the broken bone to come through the skin, and thus converting what is known as a *simple fracture* into a compound fracture; and it must be borne in mind that the difference between a simple and compound fracture is often the difference between life and death.

If a considerable time is likely to elapse between the receipt of the injury and the arrival of the doctor something must be done. If a patient has to be moved, this must be done on something flat, such as a hurdle, a door, or a stretcher of any kind. This should be placed on the ground alongside the injured person, and then while some with the patient's assistance move his body on to the stretcher, others will carefully perform the same office for the injured leg, great care being taken that the limb is kept perfectly horizontal and in a straight line.

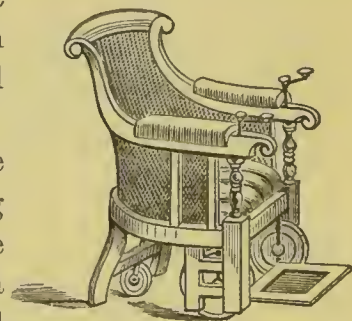


Fig. 25.—SMALL WHEEL-CHAIR.

To undress a patient requires a good deal of tact and experience. The first and most difficult matter is to remove the boot. A laced boot must have the laces completely taken out, so that it may slip off the foot as easily as possible; and a boot with elastic sides should have the elastic cut close to the seam on one or both sides. A wellington boot or a hunting boot will often need to be cut completely open. The boot being loosened to its greatest extent, one person should steady the leg at

the ankle, while another gently "humours" the boot off the foot. Even with the tightest boot a little patience will generally suffice to get it off. There must be no wrenching, tugging, or jerking, or the gravest results may follow. The stocking should always be cut open down the seam, and the foot very gently drawn off. The trouser of the injured leg must be cut open completely down the outer seam, from the band to the bottom of the leg. There must be no hurry in carrying out these directions, and it must be remembered that nothing but harm can result from a needless destruction of clothing. Having removed the boot and the stocking, and one leg of the trousers being cut up, no obstacle remains to completely laying bare the leg. If the injured part is swollen, hot, or painful, it is often agreeable to the patient to have some cold water rags applied to it, and there is never any harm in doing this. The leg may, if necessary, be steadied by having some sand-bags placed on either side of it. Sand-bags are long bags like small bolsters, made of canvas or bed-ticking, and about four or five inches in diameter and half a yard in length. These, when filled—not too tightly—with sand which has been previously washed and baked in an oven, form very valuable supports in cases of fracture of the extremities.

Keep an injured man warm.—This is very important, and although it is easily effected, it is too often forgotten. An injured person suffers from a condition which is technically known as "shock." The circulation is depressed, and a feeling of chilliness, often accompanied by shivering, is very apt to supervene. It is always necessary, therefore, except in the hottest weather, to cover a patient with blankets, and the administration of a little warm brandy and water is often advisable. It is a great mistake to cram an injured patient with brandy or other spirit, as is too often done. It may enable him to forget his pain and to put a "bold face" upon his misfortunes for a time, but the period of depression will assuredly follow, and it must be remembered that this depression will bear an exact proportion to the previous exaltation, and that an injury is a condition which demands strength not only during the first moments of its infliction, but during the tedious weeks which are necessary for its repair. Bottles of warm water are always grateful and pleasant, and are more serviceable in warding off the effects of shock than the injudicious administration of alcoholic stimulants.

The friends of a man who meets with a serious accident are very prone to be seized with an itching to do something. Formerly a man who fell out hunting, or broke his leg, or bruised his head, ran a serious risk of being bled by the first good Samaritan that came by. Now the risk is of a too brisk administration of oil and wine. The proper thing to do is to guard him from harm, including ignorant interference, and keep him warm.

ADMINISTRATION OF MEDICINE.

The giving of medicine is necessarily one of the chief and most constantly-recurring duties of the nurse, so that we shall make a few general remarks on the point, feeling sure that they cannot but prove acceptable.

If a patient is very ill and weak, he should never be bothered about his medicine. When the time for its administration comes round, the nurse should be ready with it,

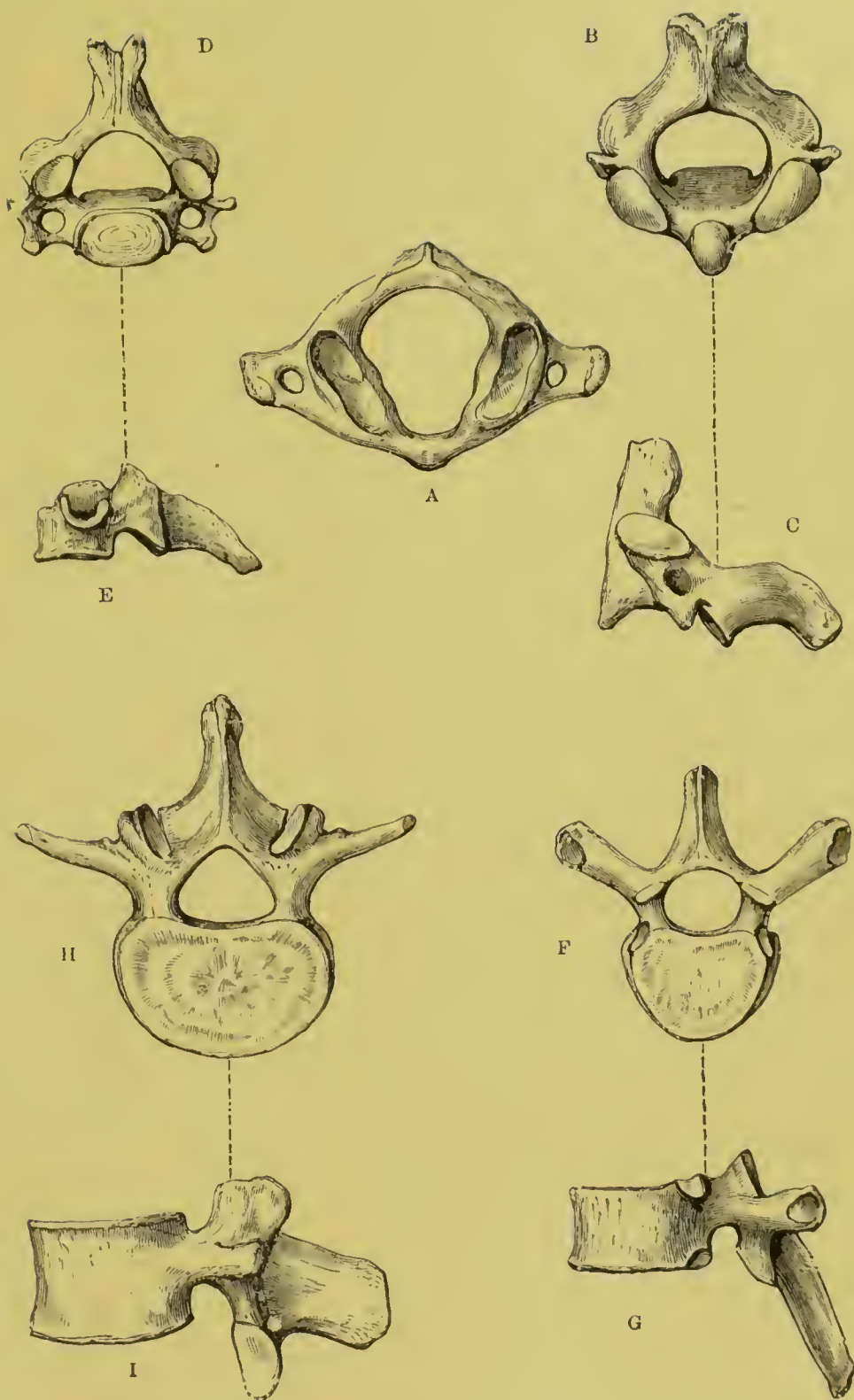
and the single expression of "Here is your medicine" is all that need pass. The fussy nurse who says, "It will soon be time to take another dose," "Are you ready for your medicine yet?" and so forth, simply annoys the patient with an unpleasant prospect, and does no good.

The glass in which the medicine is given should always be perfectly clean, and great care ought to be taken to wash it thoroughly every time it is used. This is particularly important when the medicine is an oil, like cod liver oil. What more disagreeable can be conceived than a glass with the remains of former oily doses adhering to its sides? The good nurse will never be guilty of negligence of this kind, but always give medicine so that it may cause *the least amount of annoyance* to the patient. Medicines are given at various times and with varying intervals; and it is very important that a nurse should attend scrupulously to the directions. If it is thought desirable to keep the patient perpetually under the influence of his medicine, it is usual to give it two or three times a day in a tolerably large dose; but there is a school of medical practitioners, which increases in number, with whom it is the "fashion" to give medicines in small doses *at frequent intervals*, so that while one would give say three grains of a drug three times a day, at intervals of about six hours, others prefer to give half a grain every hour. It is doubtful, however, whether the small doses are more efficacious than the large, but one thing is certain, that in the case we have supposed the patient will be disturbed with the cry of "medicine" eighteen times instead of three! This discussion, however, lies outside the region of nursing, and all we have to say is, that whatever may be the directions, the nurse's duty is to obey them implicitly.

There are one or two points, however, which require some notice. For example, medicines are often ordered to be given at intervals of so many hours—one, two, three, or more, as the case may be. Now, *as a rule*, a patient should never be roused from sleep to take either food or medicine, and there is more often a necessity to awake him to take the former than the latter. The nurse, however, should always inquire about these points, and should ask, "Is the medicine to be given at night, as well as during the day?" "Is he to be awakened to take his medicine?" "How long may he be allowed to sleep without taking medicine?"—and so forth.

Some medicines are ordered to be taken at particular times, as "at bedtime," "before meals," "after meals," &c., and these directions require attention. "Bedtime" with a patient who keeps his bed must be taken to mean "the ordinary bedtime," *i.e.*, ten or eleven o'clock, as the case may be. Tonic medicines and such as are intended to improve the appetite are ordered "before meals," and when no directions more explicit are given, about "*twenty minutes*" before the meal may be looked upon as the proper time. If these medicines are given too long a time before meals, their appetising effect passes off; if too short a time elapse between the tonic and the food, the bitter or other taste left upon the tongue is apt to interfere with the proper enjoyment of the meal.

As to medicines which are given after meals, it is important to remember that there are some few medicines—of which number *arsenic* is one—which it is not safe to administer except after a meal—that is, upon a full stomach—and if the medicine has been forgotten at its proper time, it is not to be administered at any other.



VERTEBRÆ (HUMAN).

A. Atlas, from above.
 B. Axis, from above.
 C. Axis, left side.
 D. Cervical, from above.

E. Cervical, left side.
 F. Dorsal, above.
 G. Dorsal, left side.
 H. Lumbar, above.

I. Lumbar, left side.
 J. Lumbar, right side.

It is advisable to shake every bottle of medicine before it is given, but there are some cases—when the medicine consists of a powder “suspended” in a thick fluid—in which it is absolutely indispensable so to do.

The *doses* of medicines vary, and, as is well known, they are ordered in very varying quantities, such as drops, tea-spoonfuls, dessert-spoonfuls, table-spoonfuls, and divisional parts ($\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{4}$, &c.) of the bottle in which they are contained. We ought, perhaps, to say a few words as to the exact meaning of these terms. The *imperial pint*, which is the standard fluid measure in this country, is divided into twenty fluid ounces; each fluid ounce contains eight fluid drachms, and each fluid drachm is composed of sixty minims, or drops. Now, roughly speaking, but by no means accurately so, a “drop” means a *minim*, a “tea-spoonful” means a *drachm*, a “dessert-spoonful” means two *drachms*, and an *ounce*, which is perhaps the most common of all doses, is equivalent to “two table-spoonfuls.”

This method of measuring medicines by “drops” and spoonfuls is convenient, no doubt; and although it is accurate enough for medicines which are tolerably innocuous, it must be remembered that it is very far from absolute accuracy. Whenever accuracy is necessary, it is imperative—and, in fact, in all cases it is advisable—to use a measuring medicine glass for the administration of doses of medicine. Medicines which are ordered in “drops” should in all cases be accurately measured in a *minim measure* (see Fig. 26), for it must be remembered that medicines ordered in these small quantities are always very potent indeed. Drops which are let fall in a haphazard way from the lip of a bottle are of very variable size, and their size depends upon the nature of the liquid and the shape of the bottle-lip.

Drops of thin liquids, such as tinctures and other spirituous or ethereal preparations, are very much smaller than drops of thick liquids like treacle, which, being more tenacious, hold together more forcibly. We have heard of such medicines as the solution of strychnine of the Pharmacopœia—a highly poisonous preparation—being ordered in “drops,” and measured by the patient or his nurse by dropping from the bottle. One fatal case has happened from this reprehensible practice, which ought to serve as a warning.

“Spoonfuls” vary in size as much or more than drops, a fact which must be evident to any one who has studied the fashion in these matters, and has noticed how much these domestic articles vary in shape and capacity. A table-spoonful is ordinarily supposed to be equal to four drachms, or half an ounce, but Mr. Martindale, who has made a series of experiments in the matter, finds that in reality the capacity of a table-spoon averages between five and six drachms, so that in calculating doses for hospital patients he finds it convenient, in order that the patients may not run short of medicine between the days of visiting the hospital, to reckon the table-spoonful as five drachms instead of four. The ordinary medicine glasses are plainly marked

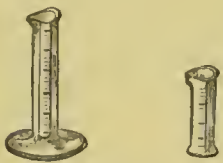


Fig. 26.
MINIM GLASSES.



Fig. 27.—MEDICINE GLASSES.

in ounces and spoonfuls (Fig. 27), so that by using these all chance of a mistake is avoided.

It is very much to be hoped that before long the *metrical system* of weights and measures may be employed in this country, if not for commercial purposes, at least for the measuring of medicines. One great advantage would flow from this—viz., that our weights and measures would then be in exact accord with those which are in all but invariable use upon the Continent. The only essential difference between English pharmacy and Continental pharmacy consists in the weights and measures, and when we see “*Pharmacie Anglaise*” written over a shop door on the Continent it means (if it means anything) that the proprietor has mastered the intricacies of the English weights and measures and can use them for dispensing. Since the metrical system is in use almost everywhere except in the United Kingdom, it may be well to give a few words in explanation of it.

The foundation of all metrical measurements is the *metre*, which is the length of one ten-millionth part of the distance from the equator to the pole, and which amounts to a little more than our yard, or, to be accurate, 39·37 inches. Now, the metre being taken as a standard, can either be multiplied or divided, the words denoting multiples of the metre being derived from the Greek, and those denoting divisions from the Latin. Thus

10 metres	make a	<i>Deca</i>	metre.
100	„	„	<i>Hecto</i> „
1,000	„	„	<i>Kilo</i> „
10th of a metre	makes a	<i>Deci</i>	metre.
100th	„	„	<i>Centi</i> „
1,000th	„	„	<i>Milli</i> „

Nothing can possibly be simpler than this, and by simply squaring these linear measurements we get means of measuring surface, and by cubing them we can estimate capacity.

The standard of weight is the weight of a cubic centimetre of water at its greatest density. This is called the *gramme*, and is equivalent to 15·432 English grains. By multiplying or dividing the gramme we are provided with decagrammes, hectogrammes, and kilogrammes, decigrammes, centigrammes, and milligrammes. Can anything be simpler than this, or in greater contrast to our troy, avoirdupois, and apothecaries' weights, our Winchester bushel, rods, poles, and perches, and such-like antiquated complications?

English medicine bottles are made of certain sizes, and are known as “six ounce,” “four-ounce,” or “ounce” bottles, as the case may be. The practised eye will soon detect the size of a bottle by the most cursory glance. When a bottle is furnished with division marks, each mark, as a rule, indicates an ounce. When the division marks are printed on a paper slip, it is useful to know this, in case the paper label should be rubbed off.

After giving a dose of medicine, it is customary to give something to “take away the taste.” A lump of sugar, a spoonful of preserve, a bit of lemon to suck, or a piece of cheese, are all useful for such a purpose, and the inclination of the patient may be taken as a guide in the selection of one of them.

It is very common to give medicines which contain strong acids or iron through a glass tube, because of the fear which patients have of corroding or blackening their teeth. It is well to wash the mouth after taking any of these medicines, either with pure water or with milk and water.

Pills.—Many people say, "I cannot swallow a pill." This is simply ridiculous, and the failure is entirely due to their setting the wrong way to work. It is evident that the people who make this assertion swallow lumps of meat or food which are ten or twenty times as big as pills, and if they would try and swallow a pill exactly as they swallow their food there would be no difficulty. To see a person "chuck" a pill to the back of the throat, and then throw the head violently back, and begin to "guggle"—an action which effectually closes the throat—is simply laughable. They would get on much better if they held the head down, or at least horizontal, in the position it assumes at the dinner table. Then let them place the pill just within the lips and take a drink of water, and the result will be that the pill must be swallowed, whether they wish it or not.

Pills should not be too old, for, from being dry, they are apt not to be dissolved. Pills containing mineral purgatives, such as mercury or calomel, should always be followed in a few hours by a purgative draught, in order to insure that the mineral matter does not produce any constitutional effects.

Pills are usually given at bed-time, but occasionally they are administered at regular recurring intervals throughout the day, like fluid medicines. If a mild purgative for daily use is required, it is often a good plan to give a pill at dinner time. In this way any violent action of the contents of the pill on the coats of the stomach or intestines is avoided, because the purgative matter is either dissolved or finely divided by the food. The pill being thoroughly dissolved in the food insures that the whole of the food is properly evacuated from the bowels.

Powders are very often given instead of pills, and for a variety of reasons: thus, the patient's stomach may be in too delicate a state to tolerate the presence of so irritating a body as a pill or dose of medicine of any other kind. A very common reason for preferring a powder to other kinds of medicine is persistent vomiting; and it is found that powders will remain on the stomach at times when it rejects everything else. Again, some persons—either from fancy, or possibly from some real disease of the throat—are unable to swallow particles of any size, and then the administration of powders becomes imperative; children, as of course is well known, obstinately refuse to take medicine of any kind, and the wisdom of our ancestors and the infantile experiences of most of us has demonstrated that powders are of all things the most difficult to reject from the mouth.

In administering powders it should be borne in mind that the act of swallowing is mainly an involuntary one, and that if the materials to be swallowed be placed far enough back in the throat they must continue their journey to the stomach whether the patient desire it or not. Powders therefore should be placed quite upon the back of the tongue, beyond what are technically known as the pillars of the fauces—i.e., the two bands which, on looking into the mouth, may be seen stretching from the uvula to the tongue on either side. That horrible instrument of torture which formerly was regarded as an household requisite, but which happily is becoming daily more and

more rare—we mean the *physic spoon*—was constructed on purpose for the administration of powders. It consisted of a spoon with a lid and a hollow handle, and it was only necessary to introduce the spoon into the mouth—into which it exactly fitted—when, on blowing down the handle of the spoon, the contents of it were left safely adhering to the back of the throat, whence all efforts to dislodge them proved almost absolutely futile. Powders are happily nowadays not often so bulky as formerly was the case, and it is seldom necessary to employ for their administration the formidable engine we have described.

When a powder is given, it is advisable to place it upon the point of a spatula or the handle of a spoon, which should then be passed quite to the back of the throat and inverted. If the patient is unconscious or only semi-conscious this is all that is necessary, and the powder may be left to find its own way to the stomach by the acts of swallowing which the presence of the powder in the back of the throat will assuredly set up. If the patient is conscious and in a state to assist in the curative measures which are being adopted for him, it is a good plan to give a drink of water or some other unforbidden liquid in order to wash it down; and of course the sooner the powder reaches its destination the sooner will the effect which it is desired to produce with it be brought about. Powders may be stirred up with water or any other liquid, which the patient then drinks “dregs and all;” in this way the powders of ergot, which it is customary to give to lying-in women, are administered.

It is usual, of course, in the case of children to mask the presence of the powder by giving it in a spoonful of treacle or preserve; this is a *manœuvre*, however, upon which it will scarcely be necessary for us to dwell.

In those cases in which it is not possible—owing to the patient's condition—to place medicine of any kind in the patient's stomach, it becomes necessary to give drugs in some other way; and, happily, we have other methods at our disposal for administering them.

The most common channel of administration in these cases is the bowel, into which we may put injections, or enemata.

Enemata, or injections, are of several kinds, and vary in nature according to the purpose for which they are intended.

If it is wished to influence the whole system by medicines inserted into the bowel, the injection must not be too bulky or it will not be retained, and the object for which it is administered will be defeated. Almost the only medicine which is so administered is opium, and there is no more effectual way of stopping diarrhœa in some cases than by the administration of injections of opium and starch. These injections should not exceed two or three ounces, or, at most, four ounces in size; the starch or arrow-root, having been made in the ordinary way, ought to be allowed to get quite cold, and should then be of such consistence that it may be passed with ease through an ordinary glass syringe. A big glass syringe of the usual make is the best instrument for giving enemata of this kind, but care must be taken to ascertain that the nozzle is thoroughly rounded at the end and not in the least jagged. The opium, morphia, or other drug to be given must be very carefully and thoroughly mixed with the starch, and—the nozzle of the syringe having been introduced with the utmost gentleness into the bowel—the process of injecting must be accomplished as *slowly* as possible.

The points, then, which are to be borne in mind with regard to these enemata—intended to control the actions of the intestines or produce sleep, are:—(1) that they must be small in quantity; (2) that they must be cold; and (3) that they must be very slowly injected.

The most common reason for giving an enema is to open the bowels. A simple injection of water, either tepid or cold, is habitually used by many persons, and especially on the Continent, for this purpose. This simple injection—or *enema simplex*, as it is technically called—may consist either of pure water, or more commonly of soap and water or gruel. Soft soap is usually considered the best for making this enema. The directions given by Miss Veitch in her hand-book are as follows:—“Enough soap should be rubbed down in two pints of hot water to render it creamy, by which time the water will be about the right temperature. The nurse must be careful to fill the syringe before introducing the tube, otherwise air is forced into the bowel before the enema is injected.”

Before introducing the nozzle of the syringe into the bowel it should be oiled. It must be inserted with the utmost gentleness, and the direction which the bowel takes should be ever present in the mind of the administrator. As the patient lies on his left side—the position which is generally recommended—the direction of the bowel is towards the left hip-bone of the patient. We have known patients very seriously hurt by the injudicious attempts of the nurse to forcibly pass the syringe in the wrong direction—that is, directly upwards in the middle line of the body. It is important to remember these directions, because it very often happens that the patient is too insensible to guide the nurse by his own sensations. It is usually sufficient merely to insert the nozzle of the syringe just so far that the enema after injection is securely retained; in rarer cases, however, it is deemed necessary to pass a long tube a great way up the bowel. This is a manœuvre that demands great care and experience, and unless the nurse is well assured that she possesses these in a sufficient degree, it had better be left to the medical practitioner to perform.

If the patient cannot be placed upon his side, he may lie upon his back with one leg raised, but the direction of the syringe must still be towards the left hip-bone.

A great variety of syringes have been devised for the administration of injections, but the purchaser should be careful to select one of the most simple construction possible, and we would especially caution him to avoid those highly-complicated apparatus which are worked by springs and clockwork. Those made entirely of india-rubber in which the pump consists of an air-ball held in the hand, and which are provided with a simple suction-tube and injection-tube, are the best for several reasons. *Firstly*, they are cheap, a consideration which is always of importance; *secondly*, they are very portable, and but little liable to get out of order; *thirdly*, the amount which can be injected through them is in no way limited by the size of the instrument, but any quantity can be sucked from a basin and thrown up the bowel.

An injection should always be slowly administered, and great care is necessary to avoid getting air into the machine, which occurrence is at once evident by the gurgling noise which the bubbles make as they are forced through the apparatus. To avoid getting air bubbles mixed with the enema, the nurse must carefully watch that the end of the suction-tube is never above the level of the liquid in the basin.

To produce a purgative action it is often advisable to inject a pint or a pint and a half of liquid. When the enema is only part administered it is very common for the patient—feeling some degree of distension of the bowel—to cry out and express a wish to evacuate the bowel, but to this the nurse should pay no attention, unless it be to discontinue the administration for a few moments—but without withdrawing the tube—until the sensation of distension has passed off, which it almost invariably does; the injection must then be slowly continued till all of the desired quantity has been given, when, after a brief interval, the tube must be slowly withdrawn. The patient should then be directed to retain the injection in the bowel until he really feels that he can do so no longer, and then when it is ultimately passed, it will be found that a copious evacuation will follow it. When giving an enema it is of course very important to exercise every care that the patient and the bed are neither of them soiled or left in a damp state after the process: a mackintosh sheet ought always to be placed under the patient's body before operations are commenced.

If it is desired to produce a very strong purgative action, it is usual to introduce some purgative drug into the injection mixture: common olive or salad oil is given not only on account of its slight purgative action, but because it also serves to soften any old and hard accumulations of fecal matter that may happen to be in the intestines. Castor-oil may be substituted for common oil, and then of course a more powerful purgative action is produced. It is usual to thoroughly mix about an ounce of castor oil with the gruel or other fluid of which the bulk of the injection is constituted.

The British Pharmacopœia provides for the administration of the following drugs in the form of enemata.

Aloes, in the *enema aloes barbadensis*, in the proportion of forty grains of Barbadoes aloes with fifteen grains of carbonate of potash in half an ounce of starch.

Assafoetida, in the proportion of thirty grains of assafoetida rubbed down in four ounces of water.

Epsom salts, in the *enema magnesiæ sulphatis*, in the proportion of one ounce of the salt with an ounce of olive oil in three-quarters of an ounce of starch.

Opium and tobacco are also given as enemata, but such powerful drugs cannot be safely given by an amateur.

The injection of turpentine—*enema terebinthinæ*—is a powerfully purgative enema. It is made with one ounce of turpentine in three-quarters of an ounce of starch.

In cases where it is impossible to put any food into the stomach, it becomes necessary to feed a patient by the bowel. This leads us to speak of *nutritive enemata*. These should not be so bulky as the purgative enemata, but owing to the necessity of introducing food in sufficient quantity into the bowel, they are generally about half a pint in quantity. It is absolutely necessary that the food which it is sought to introduce in this way into the system should be of an absolutely bland nature, and in no way irritating, or purgative action will be set up, and thus the object of the injection will be defeated. Milk may be given in this way, and it may either be given alone or it may be made the groundwork, foundation, or *vehicle*, as it is technically called, for other matters. To the milk may be added some strong beef tea or some Liebig's Extract of Meat. A writer, whose practical experience in all departments of nursing has been very considerable, recommends the following:—"Half an ounce of beef tea,

half an ounce of brandy, the yolk of an egg, and a tea-spoonful of raw arrowroot—given at intervals of one or two hours.” The arrowroot helps to retain the enema in the bowel. The whole should be pumped up very slowly, so as to avoid any action of the bowels, which might cause it to return. It is almost needless to add that the beef tea or other food used for these purposes must contain neither salt, pepper, nor any flavouring of an irritating kind.

Opinions differ very much as to the value of these nutritive enemata, and while some authorities assert that patients will live and flourish on them for even weeks at a stretch, others assert with equal decisiveness that the bowels—at least the lower end of them—having very little or no digestive power, food introduced into them is neither dissolved nor absorbed.

This has led to the introduction of *digested enemata*, in which the attempt is made by the addition of chemicals to the food to imitate the action of the gastric juice, and thus try to imitate Nature by introducing the food into the bowel very much in the condition in which it would have arrived there had it been previously passed through the healthy stomach.

Digested nutritive enemata are thus prepared: the mixture of milk, beef tea, or eggs, having been put in a jar provided with a lid, must be placed in a warm situation at a temperature of about 100 degrees Fahrenheit. If the jar be put in the fender, or on the hob, not too close to the fire, these conditions will be about fulfilled. To the jar must then be added ten grains of *pepsin*, which may be obtained at almost any chemist's shop. Pepsin is the active principle of the gastric juice, and is artificially prepared for commercial purposes from the stomach of the calf or pig. In addition to the pepsin must be added *hydrochloric acid*, in the proportion of ten drops of the acid to each half-pint of the liquid. This mixture of food, pepsin, and acid, must be allowed to stand for about an hour, at the end of which time the acidity of the liquid—which would prove too irritating for the bowels—must be neutralised by the addition of a small quantity of carbonate of soda, which must be slowly added and thoroughly mixed with the food till effervescence ceases. It is highly probable that a carefully-prepared fluid of this kind would prove far more nourishing to the invalid than enemata which have not been previously subjected to this process of artificial digestion. We have no hesitation in recommending their adoption as a rule.

After the administration of nutritive enemata, the patient should be directed to remain as quiet as possible, so that there may be no risk of the food remaining in the intestine too short a time for the assimilation of as much of the food as can be absorbed.

Another way of administering medicine, and especially narcotic medicine, such as morphia, is by injection under the skin. There can be no doubt that this method of *hypodermic injection*, as it is called, is one of the most important discoveries of modern medicine; at the same time, it must be borne in mind, that since only the strongest solutions of the most powerful drugs are given in this way, the process is never lightly to be had recourse to, and must be adopted only on the recommendation of a medical man, and must be carried out only by one who is thoroughly instructed in the use of the necessary instrument.

The hypodermic syringe is a small glass syringe constructed to hold only a few drops

of liquid, and terminating in a hollow needle, through which the fluid is injected : the piston works sometimes with a screw, and sometimes in the ordinary way. To use it one must be, in the first place, thoroughly certain of the strength of the solution which it is intended to inject. That employed for morphia is usually of such a strength that six minims of the solution contains exactly one grain of morphia, or, in other words, one drop of the liquid equals one-sixth of a grain of the potent narcotic. The next point is to fill the syringe with the exact amount required, and no more ; this is easily done with due care, as the syringe is always plainly and carefully graduated. The syringe being charged, the process of injection is not difficult : it is only necessary to pinch up a piece of the skin between the thumb and fore-finger of the left hand, and then push the sharp needle-point of the syringe completely beneath the skin ; then, as the piston is depressed, the few drops of fluid will be seen to flow from it. The point of the syringe must be allowed to remain *in situ* for a few moments, and then, as it is very gently withdrawn, the pad of the right fore-finger must be placed upon the minute puncture, to prevent the escape of the injected fluid.

As to the place for making these injections under the skin, we may say that the spot selected is of small consequence, as wherever this may be, the effect produced is not local, but upon the whole system. It is generally best to choose a spot which is not very sensitive, as the skin of the back, or the back part of the arm.

A *suppository* is a dose of medicine made up in a solid form, and of such a shape—like a conical bolus—that it can be easily introduced into the bowel. The introduction of a suppository is never a matter of any difficulty. The medicines which are used in this way are usually of a narcotic or astringent nature. The British Pharmacopœia provides formulæ for suppositories of lead and opium, tannic acid, mercury, and morphia.

Having discussed the various forms of medicine intended for internal administration, we may now pass on to consider those which are for external use.

It is often advisable to keep a part cold or hot. If cold is required, the usual plan is to apply either cold water, ice, or evaporating lotion. Cold water is applied by simply moistening pieces of lint or linen rag, and laying them on the part. It must be borne in mind that the process of evaporation, even of water, is a powerful cause of cold, and, therefore, these applications must never be covered up, but be left exposed, so as to encourage evaporation in every way. In applying moist applications to a part, care must be taken that no moisture escapes into the bed, or the patient will get chilled : the rags must be wrung out sufficiently dry to avoid this.

Evaporating lotions are merely water to which a certain amount of spirit has been added, so as to increase the rapidity of evaporation, and so enhance the degree of cold. These lotions must never be applied to a part the skin of which is broken.

Evaporating lotions are generally made with methylated spirits of wine, but any spirit answers the purpose perfectly well. It is a common custom to make these lotions with ordinary gin.

Evaporating lotions must be kept constantly wet, or they very soon get dry and hot, and then only serve to keep the part rather warmer than if they were dispensed with altogether.

Occasionally an apparatus, known as an irrigator, is employed to keep a part con-

stantly moist and cool. Thus, let us suppose that we wish to keep a bruised leg constantly cold, we may do so by suspending to the bed-cradle a wide-mouthed bottle filled with water, or any other liquid that may be thought advisable; a woollen thread or a few pieces of cotton, twisted together like the wick of a lamp, must then be placed in the bottle, with one end out and hanging just over the bruised part of the leg, which we must keep covered with a piece of rag. The capillary force of the threads will serve to draw the fluid gradually out of the bottle, and it will fall on the rag in a succession of drips, which will keep the rag constantly moist; and the rate of evaporation being nearly uniform, the degree of cold will be nearly uniform also. When employing irrigation it is doubly necessary to protect the bed from getting damp. When using cold to a part, it is very necessary to keep it persistently applied, because, as is well known, the moment the application ceases, reaction sets in, and in a short time the part glows with warmth.

When ice is used for the maintenance of cold—which is occasionally done to the head and spine—it is necessary to enclose the ice in a bladder, or some other water-proof bag. An ordinary sponge-bag answers the purpose perfectly well.

Dr. Chapman has invented bags which are especially designed for the application of ice to the spine, but a nurse of ordinary intelligence will have little difficulty in extemporising something which will fulfil the necessary requirements nearly as well as the *patent spinal ice-bag*.

The *warm applications* which the nurse will have to use are of two chief kinds, viz., fomentations and poultices.

To make a *fomentation* three things are required—boiling water, flannel, and a wringer. Of these requisites the last only needs a few words of explanation. A wringer is made of a piece of strong coarse calico about three-quarters of a yard long, and a foot and a half wide. It must be double, the edges must be firmly stitched, and at either end a loop must be left large enough to admit a piece of broom-stick a little longer than the width of the stuff. When a fomentation is to be made, first prepare the wringer by fitting the handles into the calico, then lay the calico across a basin with the handles hanging over the edge; place the flannel on the wringer, and then add the boiling water from a kettle. When the flannel is thoroughly soaked through, proceed to wring it out by means of the wringer. Take hold of it by the wooden handles, raise the boiling-hot flannel out of the basin, and then by twisting the handles in opposite directions the flannel will be wrapped in the calico, and the exertion of a very moderate amount of screwing power upon the handles will serve to wring the fomentation absolutely dry without scalding the fingers. Before a fomentation is applied to the skin, care must be taken to ascertain that it is not so hot as to be likely to scald the patient, but short of this a fomentation can hardly be too hot, and a good nurse will show her skill by the rapidity with which she can prepare a fomentation and get it applied before it has had time to get cooled.

While applying fomentations to young children, it behoves the nurse to be especially careful that they are not too hot, because the tender skin of a child is very easily scalded, and they are more at the mercy of a nurse than are adult patients.

The writer of this article has lately had brought under his notice a very sad case

of a poor child being very nearly killed by the carelessness of an inexperienced nurse, who applied a fomentation so hot that it took all the skin off the abdomen. Accidents like this would be avoided if the nurse would always remember to test the degree of heat on her own face before applying it to the patient.

After a fomentation has been applied, it must be immediately covered with some waterproof material to prevent evaporation, or else the rate of cooling will be so quick that the object of a fomentation—continued warmth and moisture—will not be gained. It is sometimes necessary to retain a fomentation *in situ* by a few turns of a bandage.

Occasionally it is recommended to add some drug to the fomentation, but it is very doubtful if remedies applied in this way are of any service. It is very common in cases where the patient is suffering much pain to sprinkle a few drops of laudanum on the flannel, and, although we have very great doubts as to the efficacy of such a proceeding, we nevertheless hesitate not to recommend that which has received the sanction of many generations of learned physicians.

Fomentations need to be repeated at regular intervals, and the nurse must be careful to have the new fomentation in readiness before the old one is removed. When a fomentation is changed, the skin should be thoroughly wiped dry with a towel before the new one is applied; if this is not attended to, any part which may have been moistened, and which might not be covered by the new fomentation, is liable to get unduly chilled.

Many special fabrics have been made for the application of fomentations, the best-known of which is probably the so-called *Spongio Piline*. This is certainly a very convenient and neat material, but when using it, it is advisable to cover it with a piece of oil-skin or other waterproof fabric to prevent evaporation from its thick edges.

Poultices are either very useful and agreeable applications, or quite the reverse, according to the skill with which they are made.

Poultices, or cataplasms, are of various kinds, and the Pharmacopœia provides for six different poultices, namely, *charcoal*, *linseed*, *hemlock*, *yeast*, *mustard*, and *chlorinated soda*. The bread poultice, which is the one in most common use, is not recognised. When we speak of a poultice we mean a linseed poultice, which is directed by the Pharmacopœia to be made in the following manner:—"Linseed meal, four parts; olive oil, one half part; boiling water, ten parts. Mix the linseed meal with the oil, add the water gradually, constantly stirring."

These directions, however, are very rarely followed in practice, and the method advised by Miss Veitch is the one usually pursued: "To make a linseed meal poultice, the vessel in which it is to be made should first be warmed; then boiling water poured in, according to the size of the poultice required. Practice alone will enable the nurse to judge the quantity correctly. The water should be sharply stirred with the hand while the meal is dropped in with the other, care being taken to stir only one way." After a poultice has been mixed to a proper consistence, the next thing is to spread it evenly on a piece of old soft linen rag. This is perhaps the most difficult part of making a poultice, as it must be of the same thickness throughout, and not in the least lumpy, or else portions of the linseed are apt to fall away from the

rest and get into the bed. "If the poultice is for an open wound, care must be taken that no threads are left on the rag on which the poultice is laid that can possibly get into it. A margin of rag should be left all round the poultice, which should be first doubled back on itself, and then over the edge of the poultice."

Although we speak of rag as being useful for the manufacture of poultices, we would impress on the reader the importance of making sure that all rags employed for such a purpose are absolutely clean. There is a great demand in large hospitals for rags for these purposes, and they are always an acceptable present, but they should never be sent without having been previously boiled, so as to remove any septic or contagious particles which may be adhering to them.

For the satisfactory spreading of a poultice, a long thin knife, or spatula—a blunt knife, not unlike an artist's palette knife on a large scale—is needed.

After a poultice has been applied, it is always necessary to cover it with a water-proof or oil-silk, in order to prevent drying and cooling.

The following are the directions for making charcoal poultice, or *cataplasma carbonis*, as it is called:—"Take of wood charcoal, half an ounce; bread, two ounces; linseed meal, an ounce and a half; boiling water, half a pint. Soak the bread in the water near the fire, add the meal and half the charcoal, stirring to a soft poultice, sprinkling the remainder of the charcoal on the surface."

Charcoal poultices are useful in cases in which one has to deal with very stinking and foul wounds, as they have very great deodorising power.

The yeast poultice is employed for very much the same purposes as the charcoal poultice, and, although they were once in high repute, they are now but seldom ordered by surgeons or physicians. The following are the directions for making the *cataplasma fermenti* of the Pharmacopœia:—"Take of beer-yeast, six parts; flour, fourteen parts; water, at a temperature of 100° Fahrenheit, six parts. Mix; place the mass near the fire till it rises.

It is important to bear in mind that the yeast poultice differs from the others in this, that the water employed to make it must not be boiling, or else the fermentative action will be arrested, and the mixture will not rise.

Hemlock poultice, or *cataplasma conii*, is very rarely employed, and is, we think, of very doubtful utility. The directions for it are as follows:—"Take of hemlock leaf, in powder, one ounce; linseed meal, three ounces; boiling water, half a pint; mix the ingredients, and add them to the water gradually, constantly stirring.

The last poultice which we need mention is the chlorinated soda poultice, or *cataplasma sodæ chlorate*, which is made thus:—"Take of solution of chlorinated soda, one part; linseed meal, two parts; boiling water, four parts; add the linseed meal gradually to the water, stirring constantly; then mix with the solution of chlorinated soda.

Miss Veitch has many excellent remarks on the subject of applying poultices, which we make no apology for quoting:—

"When a poultice is to be applied, the nurse should get her patient ready first. If he has a wound, it should be thoroughly washed and lightly covered; then the poultice should be made quickly, and applied as warm as the patient can bear it. The bad habit of making the poultice first, and keeping it warm at the fire while the

patient is prepared should be carefully avoided, as by this means the water evaporates, and instead of a poultice a hard dry cake is formed. . . . In all cases of poulticing or dressing wounds everything required should be got ready before the patient is touched. Uncover, wash, and cover again as rapidly as is consistent with careful dressing. I have seen nurses first remove all the dressings, then go for water, &c., thereby often causing much unnecessary pain to the patient. A good nurse will spare her patient every possible delay, fatigue, or excitement which it is in her power to avert from him. She should also move quickly as well as quietly."

We may now proceed to discuss another class of external applications, viz., those of a stimulating or counter-irritating nature. *These include blisters, mustard plasters, stupes, and stimulating liniments.*

The essential principle of all blistering applications is the *cantharis vesicatoria*, or blistering fly, and of this the British Pharmacopœia contains several preparations, which are in the form of liquids, plasters, or papers.

Before applying a blister the skin should be thoroughly washed, so as to remove from it every particle of grease, which seriously interferes with the action of the blister.

If one of the blistering fluids is used, it is only necessary to paint the part for a few minutes with the fluid by means of a camel's-hair brush, and then to be careful that none of the fluid is washed or rubbed off before the part is thoroughly dry. If a blistering plaster is employed, this must first be cut to the exact size required. Sometimes when the patient's skin is very sensitive, and also for the purpose of avoiding any constitutional action from the blister, a piece of oiled tissue paper or very thin silk is placed between the plaster and the skin. In France, powdered camphor is sprinkled on the blister for the same purpose.

It is often asked by patients—"How long am I to keep this blister on?" To this it is obviously impossible to return an exact answer couched in terms of time, but we may always reply—"Keep it on until a blister is raised." This is, of course, a variable period depending on the quality of the blister, the part of the skin to which it is applied, and the degree of irritability of the skin of the patient on whom it is to be applied—facts which can only be learnt by experience. The blister may be removed for a short time for the sake of ascertaining how matters are going on, and if no signs of the desired effect are observable, it must be replaced. If the blister be a good one, and the skin be clean, about twenty minutes or half an hour is generally sufficient to raise a considerable blister.

After the blister has been raised, the next difficulty for amateurs is to know what to do with it. As a general rule, we should say do nothing, but if the bladders of fluid be inconveniently large, they may be snipped with a pair of scissors, to let out the fluid. If it be thought advisable to keep up the action of the blister, the discharge from the blistered surface may be encouraged by the application of poultices or warm-water dressings to the part. If, on the other hand, it is not desired to keep up the action, the raw surface must be carefully protected from injury or irritation, and the healing process may be encouraged by the application of some bland ointment to the part, such as cold cream or spermaceti ointment, which, for this purpose, must be spread upon a thin piece of soft rag.

The mustard plaster is a domestic remedy of such respectable antiquity, and of such acknowledged efficacy, that it is almost superfluous to say anything about it. The directions given in the Pharmacopœia for making the *cataplasma sinapis*—as the mustard poultice is called—are as follows:—Take of mustard in powder two and a half parts; linseed meal, two and a half parts; boiling water, ten parts. Mix the linseed meal with the water, and add the mustard, constantly stirring.

The method employed in most households is far more rough and ready than this, and consists of spreading the contents of the mustard-pot on a piece of brown paper. As table mustard is always diluted with the admixture of a certain proportion of wheaten flour, the strength is not very different from that ordered by the Pharmacopœia.

For the sake of cleanliness, as well as to avoid the possibility of blistering the skin by the accidental adhesion to the skin of portions of mustard, it is generally advisable to place a piece of muslin between the skin and the plaster.

It is not uncommon to hear persons speak of mustard blisters, but this is a wrongful application of the word blister, since it is only in very exceptional circumstances that a mustard plaster has any vesicating, blistering action; and when it has this is due either to the great tenderness of the skin, or to the mustard having been left on too long.

Thanks to the ingenuity of a French chemist, M. Rigollot, we have a form of mustard plaster at our disposal which is so cleanly and convenient that it threatens to displace the old-fashioned forms of plaster. Rigollot's leaves are always ready at a moment's notice, and can be cut exactly to any size required.

Another form of mustard plaster is sold under the name of "Sinapine Tissue;" but the efficacy of many of these tissues is due to cayenne pepper rather than to mustard, so that we cannot so confidently recommend them.

The Pharmacopœia of the United States contains a formula for mustard paper, which is as follows:—Black mustard in powder, ninety grains; solution of gutta-percha, as much as will give it a semi-fluid consistence, and let it be spread with a suitable brush on one side of a stiff piece of paper, four inches square, and allow it to dry. Before applying it to the skin it should be dipped in warm water for fifteen seconds. The solution of gutta-percha is made thus:—Steep thin gutta-percha in eight times its weight of chloroform until dissolved; mix one part of carbonate of lead with two parts of chloroform; add this to the solution, and shake frequently, and let it stand for ten days, or until the precipitate falls, then pour off the clear liquid for use.

In making mustard poultices for children, it is advisable to put at least half of the total bulk of linseed, or the skin may be blistered.

We ought, perhaps, to say a few words on the use of ordinary *sticking plaster*, concerning which there is much misapprehension in the amateur mind. It cannot be too strongly impressed on the reader that sticking plaster is used solely for its mechanical properties, and that it has no healing power of any kind: in fact, the reverse rather holds good, for its undoubted utility as a mechanical support is to some extent counterbalanced by the sticky and dirty condition in which the parts are left after the plaster has been removed. Sticking plaster ought never, as is too frequently

done, to be put upon a raw surface ; and although it is of great use for holding the edges of a wound together, care should be taken that the attachments of the plaster are well beyond the margins of the wound. After plaster has been used for any purpose, whether for holding the edges of a wound in contact or for attaching a blister, poultice, or other dressing to the surface of the body, great care ought to be taken that the skin is thoroughly cleansed from all adhering particles of the adhesive material of which the plaster is composed. This may be done by gently rubbing the part with olive oil or turpentine, which dissolves the plaster. After using turpentine the skin must be carefully washed with soap and water, or blistering may result.

The same remarks would apply also to the employment of the various kinds of plasters which are used for many different purposes. To this class belong the "Poor Man's Plasters," strengthening plasters, and the like, which are worn for long periods on the body as protections against cold, to relieve internal pains, and to afford support to parts, such as the back, which may have become weakened from any cause. These plaisters are often worn for too long periods at the great risk of setting up irritation of the skin beneath them.

Stupes are fomentations to which some stimulating liquid has been added. The *turpentine stupe* is the one in most general use, and it is very easily prepared. Make a hot fomentation in the ordinary way, and when it is quite ready sprinkle over the surface a table-spoonful of turpentine, and apply it to the part while it is still hot. If turpentine is too stimulating, camphor may be substituted, and this may be done either by sprinkling some powdered camphor, or a few drachms of spirits of camphor, which will answer the same purpose. Stupes are invaluable applications in cases of bronchitis with great difficulty of breathing ; or for cases of colic of the bowels, in which they often give speedy relief.

Liniments are used for two chief reasons—either to give relief from pain, or to act as a stimulant, and quicken the nutritive activity of a part. Stimulating liniments are useful in proportion to the ability and thoroughness with which they are applied. Any liquid will act as a stimulant provided it be applied to the part with sufficient friction, and many persons are in the habit of ordering liniments because they wish to insure that the part shall be properly rubbed. Rubbing is undoubtedly one of the most valuable curative means at our disposal ; but in order that it may be as useful as it can be, it must be carried out with a good deal of patience and method. One object of rubbing is to make the skin red, and this is only a matter of rapidity and hardness. A bad rubber will make the skin sore as well as red, and thus great harm is done, because it is impossible to apply a liniment, or even to rub a second time, on a sore place. Thus excess of zeal may deprive the patient of his necessary treatment.

Some liniments are of so stimulating a nature that no friction is required to enhance their effect ; of such a nature are the liniments of mustard and croton oil, and, indeed, in applying the latter the nurse must be careful not to allow any of the stimulating fluid to adhere to her fingers, or they will be made sore thereby. When applying a croton-oil liniment it is advisable to protect the hand with a glove, or to use a piece of rag to rub with, and it is also necessary to remember to wash the hand with soap and water afterwards.

When using a liniment which requires to be rubbed in with some force, as when applying soap liniment to a limb the seat of paralysis, a large quantity of the liniment must be taken in the hand, and be applied to the limb; the rubbing must be effected steadily, and with considerable deep pressure, and, as a rule, in a direction towards the trunk of the body. Rubbing of this kind, if skilfully done, takes the place of exercise to a great extent, and serves to drain the disused muscles and other tissues of the effete materials which accumulate in them, owing to their forced inactivity. The main use of the liniment in these cases is to grease the surface of the limb, and prevent rough friction, otherwise the surface of the skin would very soon be rubbed off. There are one or two so-called liniments, which would, we think, be better designated as pigments: these are the liniment of iodine, which is merely painted on the part with a camel's hair pencil; and the liniment of aconite, which, when used pure, is applied in the same way.

Baths are very often ordered as curative agents, and every nurse should know how to carry out the wishes of a medical man in this important line of treatment. In order to administer baths with precision, there should be first a large bath with an abundant supply of hot and cold water, and a big waste-pipe. If these luxuries be not at hand, the nurse must supply their place by manual labour. A thermometer is always necessary to test accurately the temperature ordered. A hot bath means a temperature of 98° or 100° Fahrenheit; occasionally the heat may be allowed to rise to 104° , but this is very hot, and while a patient is being subjected to this temperature he must be very carefully watched, lest faintness ensue. A hot bath should not be continued more than five or ten minutes, unless it be specially ordered for a longer time.

Of late years a method of treating fevers by means of baths has come very much into vogue. The method usually pursued is to place the patient in a hot bath, and then to diminish the temperature as rapidly as possible; thus a patient suffering, let us say, from rheumatic fever in a high degree, is lifted out of bed and placed in a large bath at a temperature of 90° ; the water is then drawn off, and cold water is added, or even humps of ice may be put in the bath, the result being that the temperature is very rapidly lowered down to 70° , 60° , or even 50° . The patient is then removed from the bath, wrapped in a sheet, and replaced in bed. The results of this treatment, heroic as it may seem, have been very encouraging, and not a few patients have by its means been snatched from the jaws of death.

Sometimes the much simpler method is resorted to of merely wrapping a patient in a sheet wrung out of ice-cold water. This is equally efficacious in reducing the temperature of fever, and, strange to say, the patients who are subjected to this treatment do not particularly object to it; and hitherto no untoward results in the form of chills and the like have arisen from it.

When giving cold or tepid baths to healthy people, such as children, it is always necessary to ascertain that a proper reaction follows the bath. In order to ensure this, the effect of the bath must be very carefully watched, and if the skin does not quickly glow after it, the temperature of the water must be raised, and the period of bathing must be lessened.

It is generally advisable, at least in this country, to bathe children before a fire;

and it is a good plan to stand them in hot water while using cold water for their general ablutions. In this way the chilling effect of the cold water is in a great measure obviated, while the tonic effects are enjoyed to the full.

Hot air baths and vapour baths can with a little ingenuity be administered in a private house. The hot air bath is managed by placing in the patient's bed under the clothes a great Davy's lamp, so constructed that the bed-clothes are kept well off the lamp. This arrangement is perfectly safe, and so successful that in a very short time the maximum temperature that the patient can bear is reached. Whenever an arrangement of this kind is employed, the patient should lie between the blankets, in order that the very copious perspiration which will assuredly result may be thoroughly absorbed, and the patient run no chance of a chill. A vapour bath requires only a very simple contrivance: an ordinary washing-tub should be fitted with a false bottom, and over it should be hung a circular curtain made of flannel, and having a metal top like the curtain of a shower bath. An ordinary large kettle should then be fitted with a long tin pipe conducting the steam from the spout of the kettle to the tub below the false bottom, which is perforated to let the steam pass upwards.

Bleeding.—The age of blood-letting is gradually passing away, and it rarely falls to the lot of a nurse to take charge of a patient for whom loss of blood has been prescribed. Such cases do, however, occur now and again; and, although we think it is scarcely necessary to say anything about general bleeding, we feel that one or two observations on bleeding with leeches will be acceptable.

Leeches are very delicate animals, and bear handling very badly; the nurse must therefore be careful not to subject them to any rough usage, or they will possibly die or prove of no use. It is often difficult to get a leech to bite, and the most common cause of such a refusal is that the skin of the patient has not been properly cleansed before applying the leech. It is recommended by some that if the leech still refuses to bite the skin should be moistened with a little milk, cream, or sugar and water. Miss Veitch says that she once succeeded in persuading an obstinate leech to bite by putting it for a few moments into a basin with a little beer. When applying leeches they should be held delicately by the tail, but care must be taken not in any way to bruise them. Special tubes of glass called leech-glasses are sold, into which the leeches are to be placed when applying them, but care is required, lest the wrong end of the leech be put into the bottom of the tube. The leech is very similar at both ends, but the mouth is known by its presenting an appearance of three rays. A leech is said when in health to be able to extract about a fluid drachm of blood. If it be thought desirable to encourage the flow of blood, this may be done by applying poultices or hot fomentations to the part, and bleeding may be kept up for some time from a leech-bite in this way. It occasionally happens, on the other hand, that the bleeding from a leech-bite is too profuse, and this may even go to the extent of endangering life, for there is nothing in which individuals show a wider difference than in the disposition to bleed. The best way to check excessive bleeding is to apply pressure to the part by means of a compress made of lint. If this does not serve, it is recommended to apply a matico leaf, or to touch the part with caustic. Cases are recorded in which it has been necessary to bring the edges of the bite together with a stitch.

We now pass on to consider a totally different class of questions, but such as are of the greatest importance to the invalid. First, as to *sleep*—tired Nature's sweet restorer. We need hardly say that it is to be encouraged in every way, and, as a rule, the nurse will do no wrong if she consider that every other curative agent is to give way to this, the greatest of them all. There are, however, some conditions in which a patient's sleep must be regulated for him. During convalescence from very exhausting disease, care must be taken that the patient is not allowed to go too long without food. After an attack of high fever, or of delirium tremens, when the periods of sleep are inordinately long, it is necessary to awaken a patient in order to feed him. If, however, the food be not in readiness, it is surprising how short a time will elapse before the patient is again asleep. It will occasionally happen that a patient shows a disposition to sleep in the day-time and to be wakeful at night, and when this is the case it sometimes is advisable for the nurse to use some simple artifice to shorten the day slumbers. Sleep should always be encouraged in the sick-room by all possible means, and darkness and quiet ought most rigidly to be maintained. The night nurse ought to see that everything that she is likely to want in the night is ready to her hand, so that in case of any requirements by her patient during the night, there may be no needless running to and fro with unnecessary noise. If the patient is taking any narcotic medicine in order to induce sleep, great care must be taken that, after the administration of the sleeping dose, absolute quiet is maintained in the sick-room. We have known it happen that a dose of medicine, intended to produce sleep, has been completely counteracted by persistent conversation, or by the carrying out of arrangements which ought to have been perfected hours before.

INVALID DIET.

Food is infinitely more important to an invalid than drugs, and it behoves every good nurse to be in some degree a cook, and able to supply for her patient, when occasion requires, a few wholesome, appetising, and palatable articles of food. As a rule, we deprecate cooking in the sick-room, and anything which the nurse finds it necessary to prepare ought to be done in an adjoining room.

The diet of a sick person has to be very nicely regulated according to his condition.

A *slop diet* includes milk, broths, beef-tea, and cooling drinks. We do not include alcoholic drinks under our remarks on food, as the administration of these more properly belongs to the doctor than the nurse.

Middle diet includes the slops, with the addition of eggs, light puddings, and bread.

Full diet necessarily varies with the constitution of the patient and the nature of the case. It includes plain roast and boiled meats, or boiled fish, with eggs and light farinaceous articles. Vegetables ought never to be given without express permission.

Every nurse ought to possess some knowledge as to what articles are to be accounted digestible, and what are to be avoided because of their indigestibility. It is right to state that nurses often show a surprising ignorance in these matters, and it often happens that a medical man is thwarted in his best endeavours to pilot a patient safely through some disease—such, for example, as typhoid fever—in which

careful diet makes the sole difference very often between life and death, by the obstinate and ignorant self-sufficiency of the nurse, who, directly her superior's back is turned, indulges her patient with all kinds of things for which he may have a fancy, and which are, of all things, possibly the most likely to work his ruin. Thus a case occurs to us in which a patient recovering from typhoid fever was very properly placed upon a very restricted diet by the medical attendant. All went on very well. The fever subsided, and in a few days the patient would have been able to leave his bed, when suddenly diarrhœa, which had been the most troublesome symptom throughout the illness, set in again with great violence. The cause of this diarrhœa was a mystery, for the nurse stoutly asserted that there had been no disobedience in respect of the diet. On carefully examining the evacuations, however, they were found to consist very largely of the *débris* of French beans; and, on being pressed, the nurse confessed that the patient begged so hard for this indulgence that "she could not find it in her heart to say no." This reckless conduct on the part of the nurse, although it did not cost the patient his life, was, nevertheless, the means of confining him for an additional three weeks to his bed, with all the additional weakness and expense which such a course entails. This instance which we have given will, we hope, impress upon the reader the great importance of absolute firmness in all matters connected with diet.

We must refer the reader to the sections on food, which will be given in our chapter on hygiene, for particulars as to the digestibility and dietetic value of the different varieties of food; but we may impress upon him in this place a few of the most important facts which must be borne in mind in the sick-room. The things which are most easy of digestion are the simple albuminous liquids made from meat or eggs. If the stomach possess any digestive power at all, these will always be digested in small quantities, and one advantage in using them arises from the fact that they leave only a very slight residue of insoluble matter. Farinaceous articles, such as arrowroot, are also very easy of digestion; but it must be remembered that to make sure of the digestion of these materials they ought to be thoroughly mixed with the saliva, so that in all cases where the patient is too ill, or from any other cause is unable to chew, they should be given with a sparing hand. Lastly, it must be borne in mind that fresh vegetables are among the most indigestible forms of food, and that they always leave a bulky residue of solid matter, which is liable to prove very irritating to the intestines, so that it may be laid down as a broad rule that fresh vegetables, although a most desirable diet for the robust, are only admissible to the sick-room under exceptional circumstances, and with the express sanction of the medical man in charge.

The staple article of diet in the sick-room is beef tea, and every nurse ought to know how to make it. The best beef tea takes nine hours to make, and the extra time taken in its manufacture will be found to be more than compensated by the very nutritious quality of the article prepared. It is made thus:—Take one pound of the best rump steak that can be obtained. See that it is free from fat, and cut into small cubes about half the size of dice; place these in a jam-pot provided with a lid; pour half a pint of cold water over them, and let them stand for three hours; pour off the liquid, and set it aside. Next, pour another half-pint of water on the meat, gradually raise it

to a temperature of 160 degrees Fahrenheit, and keep it at this temperature for three hours. To the uninitiated it may seem difficult to fulfil these conditions, and it may be thought that we are giving directions which are merely fanciful and impossible in practice. This, however, we assure the reader is not the case; and if one is provided with an ordinary cooking thermometer and a gas jet or spirit lamp, there is nothing easier than to keep a liquid at any temperature short of boiling for any required time. Next, pour off this second liquid, and add it to the first. Lastly, pour upon the meat half a pint of boiling water, and keep it just boiling or simmering for three hours, and then pour off the liquid, and add it to the other two portions. In this way we shall have extracted from the meat everything that is soluble in cold, in hot, and in boiling water. The beef tea thus prepared is a rich brown liquid, with a copious brown sediment, and an odour of raw meat. We believe that beef-tea thus prepared is better than when prepared in any other way.

Miss Veitch gives the following directions for making beef tea :—"From a good piece of gravy-beef—which must be perfectly sweet—cut away every particle of fat, and then either scrape it into shreds with a knife, or cut it into very small pieces. Put it into an earthenware jar with a lid, add cold water sufficient to just cover the meat; put on the lid, and place the jar in a saucepan of warm water, and stand it by a good fire, or on a hot plate or oven, where it will simmer without boiling; it will require to stand for some hours before it is really good. When the meat becomes white and sodden-looking it is ready, as then all the good has been extracted from it. If not quite hot after the meat has been taken out, the beef tea should be put into a saucepan and heated, unless the patient is ordered or likes to take it cold."

The only exception we should be inclined to take to the above very excellent directions is the remark that "when the meat becomes white and sodden-looking it is ready, as then all the goodness has been extracted from it." As a matter of fact, it will be found that it is only necessary to soak meat for a comparatively short time in cold water to render it perfectly colourless and washed-out in appearance; but there is very much valuable matter still remaining in the beef, which can be extracted by properly regulated temperatures.

Some authorities assert that beef tea is better made without any water at all. They say that it is only necessary to place the meat previously chopped up in a jar with a lid, and to let it, in Bismarckian phrase, "Stew in its own gravy." We are not inclined to agree with this teaching. Water is capable of dissolving many of the constituents of the meat, and it adds so little to the bulk that on every ground it ought to be used. Beef tea before it is served requires to be heated, and it should be flavoured with salt to suit the taste of the patient. When not counter-ordered, a little pepper may be added to make it palatable, but any excessive use of condiments is to be deprecated in the sick-room. As a rule, no vegetables are put in beef tea, but nevertheless, it is generally pleasant to the patient, and often advisable on the score of health, to add a little vegetable flavouring. This may be done by boiling with the beef tea some pieces of carrot, turnip, parsnip, or a little celery seed. It must be borne in mind that no pieces of vegetable are on any account to be

left in the tea, but that they are to be all carefully strained off. It is generally customary to serve with the beef tea a few pieces of toast, or a portion of bread—that is, supposing the patient is well enough to feed himself. When toast is served it should always be dry, so that it requires to be chewed before swallowing. The worst way of giving it is in the form of little cubes floating in the liquid. In this way it reaches the stomach in a most indigestible condition, and often causes great discomfort and flatulence.

Raw meat is sometimes given to children when they can take nothing else. The best way to prepare it for them is to scrape it into a delicate pulp, and then spread it upon bread, or bread and butter, and flavour it with sugar or salt. It may even be given as a pulp out of a tea-spoon, and it is surprising to see how readily children will take what to most of us, if conscious of it, would seem a very disgusting mess.

Of late years extracts of meat have been very much in vogue for feeding the sick, and very extravagant notions of the nutritive value of Liebig's preparations have been current. These have now almost exploded, and Liebig's extracts are regarded by most authorities more in the light of stimulants than really nutritive articles. The effect of these extracts more resembles that of ordinary tea than beef tea or soup, and although they are valuable additions to a cup of beef tea or broth, they are not calculated to supply their place, nor are they of equal or even similar dietetic value.

Dr. Ringer, in his work on "Therapeutics," gives the following recipe for a *restorative beef essence*:—"Take one pound of fresh beef, free from fat. Chop it up fine, and pour over it eight ounces of soft water. Add five or six drops of hydrochloric acid, and fifty or sixty grains of common salt. Stir it well, and leave it for three hours in a cool place. Then pass the fluid through a hair sieve, pressing the meat slightly, and adding, towards the end of the straining, about two more ounces of water. The liquid thus obtained is of a blood-red colour, possessing a taste of soup. It should be taken cold, a tea-cupful at a time. If preferred warm, it must not be put on the fire, but heated in a covered vessel placed in hot water.

ANOTHER BEEF ESSENCE (Dr. Ringer).—Take one pound of gravy-beef, free from fat and skin; chop it up very fine. Add a little salt, and put it into an earthen jar with a lid, fasten up the edges with a thick paste, such as is used for roasting venison in, and place the jar in the oven for three or four hours. Strain through a coarse sieve, and give the patient two or three tea-spoonfuls at a time.

MUTTON BROTH (Dr. Ringer).—One pound of the scrag end of neck of mutton, two pints of water, pepper and salt, half a pound of potatoes, or some pearl barley. Put the mutton into a stewpan, pour water over it, and add pepper and salt. When it boils, skim carefully, cover the pan, and let it simmer gently for an hour. Strain, let it get cold, and then remove the fat. When required for use, add some pearl barley or potatoes in the following manner:—Boil the potatoes, mash them very smoothly, so that no lumps remain, put the potatoes into a pan, and gradually add the mutton broth, stirring it until it is well mixed and smooth; let it simmer for five minutes, and serve with fried bread.

PURÉES.—Purées are a capital form in which to give meat to an invalid. They are thus prepared:—The meat is cut very fine, and simmered in a saucepan until it is pulpy and sufficiently soft to pass through a hair sieve or tamis cloth. Sometimes it is necessary to pound the meat with a pestle and mortar before it can be got to pass through the sieve. Place the sieve upside-down on a dish, put the meat on the sieve, and then proceed to rub it through the sieve by means of a spoon or a stick with a rounded end. It may be necessary to add a little water, milk, or other liquid, in order to get the purée to pass the easier. The meat in a purée is in the finest possible state of division, and is consequently in a very digestible condition. A spoonful of purée meat is a welcome and valuable addition to beef tea or broth of any kind, or, indeed, it may be added with advantage to farinaceous slops. We know of scarcely anything more nourishing than a tea-cupful of arrowroot with a small quantity of chicken purée stirred into it. Purée may be made of almost any kind of meat, but perhaps that made with chicken is the most easy of digestion, and certainly is the most palatable.

It must be borne in mind that all these broths, &c., are very apt to go bad, especially in hot, close weather, and it is therefore very necessary to be sure that on each occasion of administering beef tea that it is in a fit condition to be given. A cup of sour beef tea or broth may upset the care and nursing of weeks.

EGGS.—Eggs are probably the most concentrated and nourishing food that we possess, and they may be given to an invalid in many ways. The Pharmacopœia provides for the administration of eggs in its formula for *mistura spiritus vini gallici*, which is known in ordinary circles as egg-flip. The official directions are as follows:—Take of brandy, four ounces; cinnamon water, four ounces; the yolks of two eggs; sugar, half an ounce: mix. The yolks of the eggs should first be thoroughly beaten in a tumbler till they are completely frothy, and strings no longer adhere to the prongs of the fork. Next, the sugar and some of the cinnamon water is to be added to the beaten eggs; and, lastly, the remainder of the cinnamon water, previously mixed with the brandy, is to be poured in. It is a good plan to use a couple of large soda-water tumblers for mixing, and to pour the mixture a few times from one to the other after the manner of the makers of American drinks.

We hardly know why the yolks only of the eggs are directed to be used, as the whites are scarcely less nutritious, and patients never object to them; indeed, it is impossible if the mixture be properly blended to say whether they are present or not.

In some cases of obstinate vomiting the patients will retain the whites of eggs on the stomach when they reject everything else. If cinnamon water be not at hand, a little nutmeg may be grated into the tumbler, and will be quite as acceptable to the patient. Any other spice may be substituted, or it, together with the sugar, may be omitted altogether, according to the taste of the invalid.

Raw eggs may be beaten up with any kind of liquid food, such as tea, beef tea, or broth.

Plain boiled or poached eggs or omelettes are delicate varieties of food which are of great service during convalescence.

PLAIN OMELETTE.—The following directions are taken from "Buckmaster's

Cookery":—"We must be careful that the frying-pan is perfectly clean, and free from moisture. Place in the frying-pan about one ounce of sweet butter; break three eggs separately to see that they are fresh; beat them up with a little chopped parsley and a pinch of pepper and salt. The eggs should not be beaten too much (about four seconds will be sufficient), or the white separates, and you produce a watery mixture, which destroys the flavour and appearance of the omelette. Now that the butter is melted, and in a state of froth, pour into the frying-pan the omelette mixture, and stir till it begins to set or thicken. Shake the pan occasionally; and when sufficiently firm, fold the omelette over neatly into an oval shape; strike the handle of the frying-pan so as to produce a gentle vibration, which keeps the omelette detached from the pan, and when the omelette is of a golden colour, turn it quickly in the dish. To be able to prepare a plain omelette is to be able to prepare every kind of omelette. The chief thing to be borne in mind in cooking an omelette is that the mixture does not adhere to the frying-pan."

The above recipe may be followed out in all particulars, except that we must warn the reader that chopped parsley is not to be given to an invalid without special permission granted by the medical man in charge.

It is a very important thing for a nurse to take every possible care that the patient shall not tire of his diet. A little tact and ingenuity in the matter of flavouring will often prevent this, and the nurse should contrive to ring the changes as much as possible with all the articles of diet which are permissible in any particular case. If once the fatal mistake is made of giving an invalid anything which is not perfectly good of its kind, such as a cup of sour broth, or a doubtful egg, it will almost assuredly turn him against that diet for the future, and thus a means of nourishment may be, as it were, cut off by the carelessness of the nurse. The good nurse is distinguishable from the second-rate or bad nurse, by the thoughtfulness which she invariably displays in little things of this kind, which, trifling as they may appear upon paper, are in practice really of the greatest importance, and deserving of the most anxious thought.

POACHED EGGS.—Boil some water in a saucepan, then break an egg into a tea-cup, being careful not to burst it, and place the tea-cup in the saucepan of boiling water. The egg should then be carefully placed upon a piece of toast, or a slice of bread and butter.

BAKED CUSTARD PUDDING.—Warm half a pint of milk, or a little more; whisk two eggs, yolks and whites, pour the milk to them, stirring all the while. Have ready a small tart-dish lined at the edges with paste ready baked. Pour the custard into the dish, grate a little nutmeg over the top, and bake it in a very slow oven for half an hour.

BOILED CUSTARD PUDDING.—Prepare the custard as in the foregoing recipe. Butter a small basin that will exactly hold it, put in the custard, and tie a floured cloth over it; plunge it into boiling water, turn it about for a few minutes; boil it slowly for half an hour; turn out, and serve.

Hitherto we have dealt only with foods of the nitrogenous or meaty order, it must not be therefore supposed that farinaceous things are to be neglected in the dietary of the sick; on the contrary, we believe that a great mistake is often made in not

giving a far larger quantity of starchy matter than generally is allowed. Those who have stood by the bedside of an elderly invalid, complaining perhaps, as part of his symptoms, of chilliness and cold extremities, and have watched the general glow which follows the administration of a small cup of arrowroot, will have learnt a very valuable lesson. The effect, indeed, seems to us to be exactly comparable to putting coals on the fire.

ARROWROOT.—This made either with water or milk is a most valuable article of diet in the sick-room. When made with water it is little more than a decoction of starch, and is useful chiefly as a heat producer; but when the nutritive power of the milk is added to that of the arrowroot, we have a food which seems almost a type of what a food should be.

A small dessert-spoonful of arrowroot will thicken about half a pint of water or milk. The arrowroot should be placed first in a tea-cup or small basin, and should be thoroughly mixed with a small quantity of cold water until all the little lumps are completely broken down; then add by degrees the boiling water or milk, and continually stir the mixture. It may be flavoured with sugar, and a little nutmeg, or other kind of spice, or some lemon-peel may be added.

ARROWROOT DRINK.—Mix two tea-spoonfuls of arrowroot in about three table-spoonfuls of cold water, then pour in about half a pint of boiling water; when well mixed, add by degrees half a pint of cold water, stirring all the time, so as to make it perfectly smooth. It should be of about the consistence of cream; if too thick, a little more water may be added; then pour in two wine-glassfuls of sherry, or one of brandy; add sugar to taste, and give it to the patient in a tumbler. A lump of ice may be added if allowed.

BREAD PUDDING.—Grate old bread, or take stale pieces of bread, and pour boiling milk over them; cover down till perfectly soaked; beat them quite smooth, add sugar, eggs well beaten, and milk; grate nutmeg on the top, and bake, or put into a basin and boil. Broken stale biscuits may be used instead of bread.

COMMON RICE PUDDING.—Butter a baking-dish; put a small tea-cupful of rice, a little sugar, and a bit of butter into it; fill the dish with milk, and grate a little nutmeg over the whole; bake slowly till the rice is swelled and soft. Some persons like the rice to be first boiled, and an egg or two also to be well beaten with the milk.

RICE MILK.—Three table-spoonfuls of rice, one quart of milk. Wash the rice, put it into a saucepan with the milk, and let it simmer gently till the rice is tender, stirring it now and then to prevent the milk burning; sweeten a little, and serve with a cut lemon, black-currant jam, or stewed apples.

TAPIOCA PUDDING.—One ounce of tapioca, one pint of milk, one ounce of butter, two eggs, sugar to taste. Wash the tapioca, and let it stew gently in the milk for a quarter of an hour, stirring it now and then. Let it cool, mix with it the butter, sugar, and eggs, which must be well beaten; put it into a small tart dish, and give it an hour's baking in a moderate oven.

OATMEAL GRUEL.—Put the groats or oatmeal into a saucepan, pour a little cold water upon them, and mix well; add more cold water, and stir occasionally. Boil it slowly, and never neglect to stir it; strain it, and put sugar or salt, as best suits the

taste. About a pint of water to an ounce of groats is the proportion, and this quantity requires about three-quarters of an hour's slowly boiling.

A prominent symptom of many acute illnesses is thirst, and there is nothing for which the invalid so often asks as "something to drink." It is important to know how to satisfy these cravings.

TOAST AND WATER.—This is made by toasting a piece of crust of bread until it is quite brown, or almost black; then it is placed in a jug, and upon it is poured some cold water. After standing for a short time it is fit to drink.

SODA WATER AND MILK.—There is no better drink than a bottle of soda water mixed with a third part of new milk, and cooled with a lump of ice.

LINSEED TEA.—An ounce of linseed and a pint of boiling water are put into a jar provided with a cover. This should be allowed to stand for an hour before the fire, and should then be strained. It may be flavoured with sugar or lemon-peel.

PEARL BARLEY WATER.—Wash an ounce of pearl barley in cold water three or four times, throwing away the water each time, as it will be very dirty; or boil it for a few minutes, and then throw the water away. Next add about a pint and a half of water, a bit of lemon-peel, and a little sugar. Allow it to simmer, stirring it constantly until it is of a very nice thickness; then strain it, and add lemon-juice. If a very slight flavour of lemon is preferred, with a very little acid, put a slice of lemon with the barley in the water. Sweeten to taste. Barwell recommends a few sweet almonds beaten to a paste to be first added, as they give a very pleasant and smooth flavour to the drink. While sweetening all the drinks of the barley-water type, it must be borne in mind that too much sugar is apt to cloy the palate, and also to generate wind in the intestines.

LEMONADE.—Peel one lemon or more, according to the quantity required and the size of the fruit. Pour a small quantity of boiling water over the peel, and cover it close. Squeeze the lemon, and remove the pips. Pour some boiling water upon sugar in a separate vessel; when the sugar is perfectly melted put the juice into it, add cold water, tasting as you proceed till you find the drink does not taste too strongly of the juice; then put in enough of the peel to flavour it according to taste. "Lemons," says Barwell, "differ so much in the quantity of juice they yield, and even in the strength of the acid, that accurate directions as to quantities are useless; you must be guided by the taste." Be careful to melt the sugar in water before you add the juice. Oranges may be used with or instead of lemons.

IMPERIAL DRINK.—This is a time-honoured drink in the sick-room, where it was formerly known as *Potus imperialis*. It is made by dissolving a drachm or a drachm and a half of cream of tartar in a pint of boiling water, and flavouring with lemon-peel and sugar. When cold it may be taken *ad libitum* as a refrigerant drink. It has also slight diuretic qualities which are often of service. Cream of tartar enjoys a wide-spread reputation as a cooling salt, and is consumed very largely by Europeans working in hot climates or hot places, such as the stoke-holes of ships, &c.

CAUDLE.—Beat up an egg to a froth, add a wine-glassful of sherry, and half a pint of gruel. Flavour with lemon-peel and nutmeg, and sweeten to taste. We do not profess to know what are the particular virtues of this renowned beverage, but

we give it a place in our catalogue of invalids' foods, because it would seem too discourteous to omit it.

ORGEAT.—Blanch two ounces of sweet almonds and four bitter almond seeds. Pound with a little orange-flower water into a paste, and rub this with a pint of milk diluted with a pint of water until it forms an emulsion. Strain and sweeten with sugar. This is recommended by Dr. Pavy as a demulcent and nutritive liquid.

WHEY.—Curdle warm milk with rennet, and strain off the opalescent liquid for use. This is a favourite drink in many complaints, and in several parts of Germany invalids resort to particular localities to undergo the so-called "Whey Cure." It is said to produce perspiration and diuresis, and it is also mildly nutritive.

WHITE-WINE WHEY OR POSSET.—To half a pint of milk, whilst boiling in a saucepan, add a wine-glassful of sherry, and afterwards strain. Sweeten with pounded sugar according to taste. This is a favourite remedy for colds.

TREACLE WHEY.—Pour two or three table-spoonfuls of treacle into a pint of boiling milk, and afterwards let it boil up well, and strain. This is drunk as hot as possible after the patient is in bed at night, and is regarded by many as a sovereign remedy for a cold.

TAMARIND WHEY.—Stir two table-spoonfuls of tamarinds into a pint of milk whilst boiling, and afterwards strain. This is recommended by Dr. Pavy as a refrigerant and slightly laxative drink.

We may bring our remarks on the feeding of the sick to a conclusion by laying before our readers a few additional recipes for the cooking of wholesome dishes which may be of service to the delicate and convalescent, as well as to the acutely ill.

OATMEAL PORRIDGE.—The following are Dr. Pavy's directions for making this highly nutritious article of diet :—

"Mix a large table-spoonful of oatmeal with two table-spoonfuls of cold water. Stir well to bring to a state of uniformity, and pour into a pint of boiling water in a saucepan. Boil and stir well for ten minutes. Flavour either with salt or sugar as preferred. Milk may be used instead of water, or the boiling may be continued for half an hour, and the porridge turned out into a soup-plate, and cold milk poured over it. Thus prepared, the porridge sets and acquires a solid consistence, and the milk and porridge are mixed together little by little, as they are eaten, with a spoon. If the coarse Scotch oatmeal is used—and this is generally considered the best—two table-spoonfuls may be sprinkled into a pint of boiling water, and stirred and boiled for half an hour. At the end of this time the oatmeal is sufficiently cooked, but may allow the porridge to continue simmering for two or three hours. It may be turned out into a soup-plate, and eaten with milk after the manner above mentioned."

MILK AND SUET.—Boil one ounce of finely-chopped suet with a quarter of a pint of water for ten minutes, and press through linen or flannel. Then add one drachm of bruised cinnamon, one ounce of sugar, and three-quarters of a pint of milk. Boil again for ten minutes, and strain. A wine-glassful to a quarter of a pint forms the quantity to be taken at a time. It constitutes a highly nutritive and fattening article, but if given in excess is apt to derange the alimentary canal, and occasion diarrhœa.

CALF'S-FOOT JELLY.—Procure two calf's feet or a cow heel, the latter being much cheaper and equally nourishing. Buy the feet with the hair on, because when ready prepared a great deal of the substance which makes jelly has been boiled away. In order to get the hair off, have ready a saucepan of boiling water; hold the foot in it with your fingers so that the water just covers the hair; from five to ten minutes is long enough; the hair will scrape off easily with a knife. Put the feet into about five pints of water, and boil them till half the water is wasted; strain it, and when cold take off the fat. Put it into a saucepan with sugar, lemon-juice, some lemon-peel, according to taste. If wine is permitted, you will put in as much as is judicious. In order to clear the jelly, the whites of five eggs well beaten up to a froth and the shells broken up must be added. Set the jelly on the fire, but do not stir it after it begins to warm; when it rises to a head, let it boil for twenty minutes. Prepare a conical bag of coarse flannel, with two strings on the broad part, with which to tie it to the backs of two chairs. A coarse huckaback towel, which may be tacked together, making one corner the point, is even a better jelly-bag. Dip the bag in hot water, and squeeze it dry. Having placed a basin or shape under the point of the bag, pour the contents of the saucepan carefully into it, and they will run slowly through into the shape. Do not press the bag, or the jelly will be cloudy. Great clearness is not important, since this quality is more to please the eye than the palate. Calf's-foot jelly may be made without wine.

PLAIN BOILED SOLE.—Thoroughly wash and clean a sole, and put it into plenty of cold water, with salt, say one ounce to a quart of water; bring it gently to the boil, put it aside to simmer for five or ten minutes, according to size. When ready, place it in a clean napkin, garnish with parsley and slices of lemon, and serve with plain melted butter or whatever sauce is preferred. Violent boiling is to be avoided.

PANADA.—Take the white part of the breast or wings, freed from skin, of either roast or boiled chicken, or the under side of cold sirloin of beef, or cold roasted leg of mutton, and pound in a mortar with an equal quantity of stale bread. Add either the water in which the chicken has been boiled, or beef tea, until the whole forms a fluid paste, and then boil for ten minutes, stirring all the time.

We shall bring our observations on nursing to a close by bringing under the notice of the reader some of the more important points about a patient which a nurse ought to know how and when to observe.

First, as to temperature, we may say that no nurse can be considered as at all competent to fulfill her duties until she has completely mastered the very simple process of taking a temperature accurately, and keeping a record of the same. The temperature is the most certain indication we have as to a patient's condition, and of all instruments used in the investigation of disease, the thermometer is the least likely of any of them to mislead. Special thermometers, called *clinical thermometers*, are sold for use in the sick-room. They are three or four inches long, and about the thickness of an ordinary pencil-case. They ought all to be self-registering, and we would not advise the purchase of such as do not fulfil this requirement, because it is inconvenient and disagreeable, not to say dangerous, to be constantly leaning over a patient to read off the thermometer before it has been

removed from contact with his body. We have known more than one case of fever which was presumably contracted in this way. The natural temperature of the body is 98·4 degrees of Fahrenheit. Any deviation from this is an indication of something wrong, but for practical purposes we may say that no temperature need be looked upon as too high unless the thermometer stand above 99 degrees. The temperature is usually taken by placing the thermometer either in the mouth or the armpit of the patient. If the patient be in bed, perhaps the armpit is as good a place as any. The patient should be turned slightly on one side, and then the bulb of the thermometer should be thrust completely into the very point of the armpit of the side which is uppermost. The hand should then be drawn across the chest, and the patient must be thoroughly covered up with the bedclothes. After the thermometer has remained *in situ* about five minutes, it may be removed, and the temperature be read off and immediately recorded. In reading off a temperature, it must be remembered that the top end of the register, and not the bottom end nearest the bulb, is the correct indicator. We should have, perhaps, reminded the reader always to be sure to see that the register stands well below the normal temperature before applying the thermometer. This seems an almost needless precaution, but our experience tells us that it is very often neglected, and loss of time is consequently entailed. If the patient be not in bed, or if a temperature is wanted in a hurry, the thermometer may be placed in the mouth. In this case the bulb should be put under the tongue, and the patient directed to close the lips, but not the teeth. With the thermometer in this position, a correct temperature may be taken in about a minute. If the patient be a very young child, or insensible from delirium or any other cause, the best place, perhaps, to take the temperature is the lower end of the bowel or rectum. Here, too, a temperature may be taken quicker than in the armpit. Always remember to wash the thermometer thoroughly after taking a temperature. If this be neglected, the thermometer may be the means of conveying contagion from one patient to another. Special charts for the recording of temperatures may be obtained, but it is generally sufficient, for ordinary purposes, to enter in a book or on a sheet of common notepaper the temperature and the time at which it was taken. The temperature, in any case in which an accurate knowledge of it is important, ought to be taken at least twice a day—morning and evening—and as much oftener, of course, as the medical man may desire.

A nurse should also be able to “take a pulse.” This is done by placing the forefinger on the blood-vessel which may be felt at the wrist, on the outer side, just above the junction of the thumb with the wrist-joint. While the pulse is being counted, the patient should be in a recumbent position, with the arm on which the pulse is being counted in a state of absolute repose. The finger should then be placed quietly on the pulse, the attention of the patient being attracted thereto as little as possible, since the pulse is very easily altered by slight emotional causes. The pulse may very well be taken while the thermometer is in position. The pulse should be counted for at least a minute by the seconds’ hand of an ordinary watch. In old days, before watches were provided with seconds’ hands, it was usual to compare the pulse of the invalid with that of some other person known to be healthy. Thus, in Pepys’ “Diary,” we find it recorded:—“October 19th, 1663. Coming to St. James’s,

I hear that the queen did sleep five hours pretty well to-night, and that she waked and gargled her throat, and to sleep again; but that her pulse beats fast, beating twenty to the king's or my Lady Suffolk's eleven. It seems she was so ill as to be shaved and pigeons put to her feet, and to have the Extreme Unction given her by the priests, who were so long about it that the doctors were angry. . . . The king, they all say, is most fondly disconsolate for her, and weeps by her, which makes her weep; which one this day told me he reckons a good sign, for that it carries away some rheume from the head."

This gives an interesting and amusing idea of medical practice in the time of the merry monarch; and from it we may gather that if his majesty's pulse were not quickened, the queen's beat about one hundred and thirty in the minute.

• Directly the pulse has been taken it should be recorded with as little delay as possible.

A record of the rate of respiration is in many cases of scarcely less importance than that of the pulse. It is best taken by laying the hand quietly, and without attracting the patient's attention to the fact, upon the stomach if the patient be a man, and upon the upper part of the chest if a woman, and then simply counting the number of times the chest or abdomen heaves in a minute.

The respirations should be taken at the same time as the pulse, and these two records must be entered on the same page with the temperature. The pulse and respirations bear in health a definite proportion to each other, and it will be found that for every respiratory movement there are four beats of the pulse. Any marked departure from this ratio is to be taken as an indication of disease. It will be readily understood that if a portion of one or of both lungs be from any cause *hors de combat*, that the healthy part remaining will have to work all the harder, and it is in such cases as these that we find a quickening of the ratio which respiration bears to pulse, and instead of its being one to four, it may rise as high as one to three or one to two.

The amount of cough is another matter which a nurse ought carefully to notice, and not only the amount but the manner of coughing also. Thus a cough may be violent or hacking, tight or loose, accompanied by expectoration or otherwise, and these points are all to be carefully noted. The fact that a patient who has not previously coughed has been heard to cough only once or twice during the night may be a fact of the greatest importance. The character of the expectoration—supposing some untoward circumstance has interfered with its being kept, as it always ought to be, for the inspection of the physician—is always to be noted. Was there any blood in it? How much was there? Was it watery or thick? Was it yellow or rusty-coloured? Was it very sticky and tenacious? Did it smell strongly? These are questions which a nurse may expect to have put to her on this point, and to which she should always be ready to give a prompt and satisfactory reply.

Perspiration is another point to which the nurse's attention must be directed. The amount, the time, the part of the body upon which it appears most thickly, and any peculiarity of odour, are all to be noted.

The amount of sleep also is a matter upon which the medical attendant wishes to be accurately informed. The best plan is to note down the hours of sleeping and

waking, and to add any remarks as to the character of the sleep which may seem desirable. Restlessness, wandering, or muttering are to be noted. Grinding of the teeth or snoring are to be noted, especially in the case of children.

It may happen that a nurse is left alone with a patient during an attack of convulsions, and it is important she should know not only what are her duties during the attack, but what are the points which are to be noted for the information of the doctor. During a fit the chief thing which needs to be done is to keep the patient free from harm if possible. Try to restrain the movements just sufficiently to avoid the bruising of the limbs by being brought in violent contact with hard bodies, such as walls and furniture. The safest spots on which a patient can have a fit is a bed or the floor, and if he be not on the one he should be placed upon the other. The dress should be loosened round the throat and waist, and if there is any tendency to bite the tongue it is a good plan to put a big cork or bung between the teeth. It is not much use to sprinkle water, although this is often done because the bystanders feel that they must be doing something.

In an ordinary fainting fit the first and most important thing to do is to lay the patient down in an absolutely horizontal position; if this be not done all other restorative measures will be in vain. The dress must be loosened; cold water may be sprinkled on the face, care being taken not to make the patient unnecessarily damp; ammonia may be held to the nostrils, and a small quantity may be given to drink.

In every kind of fit the nurse ought to notice the complexion of the patient at the time of the seizure, whether natural, or pale, or dusky. The presence or absence of any sudden cry at the first moment of onset is also important. Anything which the patient may say just before or during a fit will often serve to give one a clue to a right appreciation of the true cause. If the patient be convulsed, the mode of onset of the convulsions should be particularly noticed, whether, for example, they begin in the arm, or the leg, or the face, and on which side of the body.

Occasionally it is necessary to restrain a patient, owing to the violence of his delirium, and there is a marked difference in the tact with which different nurses control patients of this class. First, it is necessary never to be frightened; but to give such a direction as this is, we know, a simple absurdity, since fright is generally a matter which is quite beyond our own control, and no directions of ours will enable a nurse not naturally endowed with nerve to be courageous under trying circumstances. Use, however, is second nature, and since much fear arises from ignorance and misapprehension, it will be found that the nurse with the greatest amount of experience is the most cool and collected in times of excitement. If a patient shows a disposition to be troublesome, he must be managed quietly and firmly. Do not talk to him unnecessarily, and always let him see that you mean to be obeyed. Never argue with a sick man, and least of all with one whose malady is mental. If a patient with delirium tremens, as is very often the case, gets a notion that there are persons in the room with him, or that there are plots against him, much may be done to remove his alarm by quiet demonstration of the real facts of the case. It is one of the characteristics of these patients that "They do fear each bush an officer," and to their diseased imaginations the commonest objects become sources of alarm.

If, however, the curtain, or the hanging garment, or whatever it may be that has caused the fear or apprehension, be removed, the patient may become quiet. If, in spite of these demonstrations, his delusions continue unabated, it is best not to talk about them ; and if he persist, do not worry him by contradiction. The writer is not one of those who object to restraint of a mechanical kind ; on the contrary, he believes that in cases where it has been necessary to apply it, that many lives have been lost by timorous hesitation on the part of the patient's protectors. A straight waistcoat, when properly applied, does not inflict any serious suffering, and it often happens that a patient becomes much more calm after it has been put on than he was before.

A correct account also of the condition of the patient's bowels, and of the evacuations passed from them, is, as is well known, of the first importance. The number of motions per diem is to be carefully recorded, and, if necessary, each motion must be set aside till it has been seen by the medical attendant.

The colour and consistence of stools is also to be noted. The proper colour is a deep brown. Blackness may arise either from the patient taking some preparation of iron as medicine, and, in rare instances, from the presence of blood in the motion. Pale yellow stools are supposed to show a sluggish action of the liver ; the stools of typhoid fever also are pale yellow. The motions of children are often white from the presence in them of curdled milk, which may be taken as an indication of faulty digestion, either from the condition of the stomach or the food. The stools should always be examined for the presence of blood or slimy matter, which is often an indication of inflammation of the bowels.

THE NURSING OF CHILDREN.

GENERAL PRINCIPLES OF MANAGEMENT: Cleanliness—Warmth—Fresh Air—Infant's Food—Suckling—Feeding by Hand—Milk—The Feeding Bottle—No Starchy Food to be Given—Preserved Milk.
WEANING: Food after Weaning. MANAGEMENT AFTER WEANING: Sleep—Exercise—Education.

GENERAL PRINCIPLES OF MANAGEMENT.

AMONG the lower animals maternal instincts are the sufficient and the safe guide for the nurturing and bringing up of their offspring, but with the human race, who live in a manner which is purely artificial, and whose young are reared amid the necessary but disease-causing paraphernalia of civilisation, the case is far otherwise. It is a fact which is painfully true, that in this country, and especially among the lower orders, young mothers seem to have neither instinct nor knowledge to tell them what is the treatment which their young children should receive at their hands.

It is not too much to say that a large proportion of the disease which is so common in the early years of life is due to want of attention to a few plain and simple rules, although much, no doubt, is caused by poverty, by diseased parentage, and by the bad hygienic arrangements which are to be met with among the crowded habitations of the poor and labouring population inhabiting our urban districts.

We propose in this chapter to lay down a few simple rules which may be of service in helping the inexperienced to safely guard the young committed to their care.

Keep the child clean.—This perhaps is the most important point in the management of children. The first office which is performed for a child is to wash it, an operation which demands skill, patience, and attention from the nurse. A child should be washed all over at least once a day with warm soap and water. This should be done before a fire, and it is needless to say that it should be done expeditiously, so as to run as little risk as possible of causing a chill. It must be remembered that the skin of a child is very delicate and very sensitive—sensitive to heat and cold, or to the irritation of dirt, moisture, or friction. Children are very liable to skin diseases, and these diseases are in many instances attributable to want of cleanliness. Care must be taken that after washing the body is wiped *thoroughly* dry. It should first be dried with a soft towel, and it is a good plan to finish with an old soft silk handkerchief. It is customary to powder a child's body after washing. This is a good plan, as it insures dryness and prevents friction. The body must be *dry* before the powder is applied, and care must be taken that there is not enough moisture on the body to cake with the powder, or it will be productive of harm instead of good. The best powder is very finely-powdered starch. The "violet powder" of the shops is merely powdered starch scented. The scent is an agreeable addition. "Powder puffs" are usually sold for the application of powder; a piece of cotton-wool will, however, answer the purpose perfectly well.

The buttocks and pudenda of a child are constantly wet from the passing of urine and motions. A very young child is practically never dry, the dribbling of urine being almost constant. The bowels of a new-born baby should not act more than four or five

times a day. This constant involuntary passage of the excretions necessitates the wearing of napkins. Napkins should be made of old calico. Old sheets or pillow-cases form an excellent material: they should not be made of linen. They should be double, and of a square shape—about three-quarters of a yard square will be found a convenient size. A napkin should be folded corner to corner, like a shawl. The broad side of the triangle should be wrapped round the waist, and the pointed end should then be passed between the child's legs from behind forward, and the three ends fastened in front by a safety pin. Ordinary pins should not be used, lest the child be hurt by them. Some mothers always fasten the napkin with a needle and thread; but whenever we see this we cannot avoid the suspicion that the napkins are not changed as often as they might be. Waterproof materials must not be used for napkins, because they keep in the moisture too much. When the child is in its-cot, it is a good plan to place a small piece of waterproof sheeting under its middle, so as to protect the bed-clothes. Napkins should be changed very frequently, and the child washed, dried, and powdered. The motions and urine are both highly irritating (much more so than warm salt and water), and if this be left long in contact with the body the skin will become inflamed and sore. This may savour of over-carefulness to many; but when the child falls ill, and they find by bitter experience how much more attention a sick child requires than a healthy one, they will discover that no amount of attention can be considered as too much if it but tend towards keeping the child healthy. The necessity of wearing napkins places the human infant at a disadvantage when compared with the young of any other animal. It is a necessity, we admit, but it is a necessity which is fraught with no small amount of danger to health. Disease sometimes places the adult in the same position as the infant in these respects, and the mind recoils at the thought of the disgusting discomfort which this entails. The evils of the napkin can only be counterbalanced by the most unremitting care and attention to cleanliness. Any nurse who is slovenly in this important matter is not fit to have the care of young children.

Some authorities are of opinion that children ought to be washed at night before being put in their cots, rather than in the morning. This is a matter of no great moment, and may well be left to the mother or nurse to suit her own convenience.

Keep the child warm.—This is as important as the previous injunction. They are best kept warm by warm clothing, and not by big fires and closed doors and windows, which are highly injurious. The clothing should not be tight, and should allow of the free exercise of the limbs. That which is next the skin should be of flannel. Cleanliness in the clothing is of great importance, and it should be changed whenever it becomes at all soiled. A healthy child delights to kick, and in its cot seems to spend its time, when awake, in smiling and crowing, and in an endless endeavour to put its toes into its mouth. This kicking takes the place of exercise in older people.

Children that are born prematurely require a great deal of artificial heat, and in the few cases on record in which a child born at the sixth month has been reared, this has only been by the most extraordinary efforts in supplying it with artificial heat by means of hot bottles, &c.

Give a child plenty of fresh air.—The windows of the day nursery should be opened wide at least once a day, to get the room thoroughly ventilated, and great

care should be taken that the sleeping-room is not over-crowded. The washing of small articles (such as napkins, &c.) is not to be carried on in the nursery, as the steam from the hot water and the drying of the clothes spoils the atmosphere. A child should be taken frequently into the open air during fine weather, its body being well wrapped up, and its face protected by a thick veil. Although we recommend plenty of fresh air as necessary for a child, we need hardly say that it should be protected most carefully from draughts and chills to which they are particularly sensitive. When in the air, the head must always be carefully protected from the heat of the sun, and the nurse must always be careful to hold a sunshade over it, and to pull up the head of the perambulator when necessary.

INFANT'S FOOD.

Suckling.—A child must be fed with the greatest care. The proper food for a young child is its mother's milk, and provided the mother be healthy and have sufficient milk, the child should be fed upon nothing else for the first seven months of its life.

A child that is suckled should be put to the breast at regular intervals, and should be allowed to remain there until it shows signs of repletion, when it should be removed. A child under three months of age should be suckled every two hours; between three and four months old, every two hours and a half; between four and five months, every three hours; between five and six months, every three hours and a half; and at seven months, every four hours. A child is not to be fed, as is too often the practice, every time it cries. In this way the stomach gets over-distended, and is never properly rested, and the child becomes very liable to be tormented by wind and spasm. It is insisted upon by some that the child should always be suckled in an upright and not a recumbent position.

If the child be suckled by a wet nurse, great care should be taken to ascertain that she have no hereditary disease. "A wet nurse should have been confined at about the same date as the mother. The best age is between twenty and thirty; and it has been asserted that brunettes make better nurses and give better milk than blondes." If the child while suckling should suffer from diarrhœa, or any other form of illness, it is always well to make very particular inquiries as to the state of health of the mother or nurse. Slight causes, even emotional ones, seem capable of reacting prejudicially on the child through its nurse.

If the mother or nurse have sufficient milk, the child need receive no other food whatever until it is seven months old; but if the supply of milk fall short, there is no reason why it should not be supplemented by the milk of some other animal. There is an old-fashioned prejudice very common among monthly nurses that "it is dangerous to mix the milks." There is no ground whatever for such a belief. In fact, we believe that it is often better to mix the milks, than to deprive a baby altogether of that nourishment which its own mother is able to supply it with.

Feeding by hand.—If a child be brought up by hand it should be fed *entirely upon milk* for the first seven months of its life or until it has cut its four front teeth.

Milk is a food which will support life at any age. It has been spoken of as the typical food which contains all the "alimentary principles" to be found in the animal, vegetable, or mineral kingdoms.

That part of milk which makes *cheese*, which is technically known as caseine, is the nitrogenous principle, and must be compared to lean *meat* in nutritive value.

That part of milk which rises to the surface in the form of *cream*, and of which we make butter, is the fatty principle.

That which gives the sweetness to milk—the sugar of milk, or lactine—is exactly comparable to the nutriment got from the sugar-cane and other sweet vegetables.

Besides this, milk contains saline matter and water. We cannot feed a child as we feed a man upon a slice of fat meat, bread, and salt ; but it must fill our minds with wonder and thankfulness that Providence has provided for our young a fluid which contains in solution all those substances which are necessary to support life.

Compared with this wondrous food which Nature has provided, the various foods and mixtures which have been invented by Liebig and by other chemists appear the most clumsy imitations, and fall far short of their prototype, as the most delicately-painted landscape fails to represent the soft natural beauty of the original, or the most carefully and skilfully-constructed automaton fails to be anything but the most bungling imitation of the breathing, moving, thinking being that it is designed to represent.

The mother's milk is the best and safest food for a child, for two reasons : *first*, because it is the most delicate of any kind of milk, and it is not too rich for the fragile creature it is intended to support ; and *secondly*, being drawn direct from Nature's fount, it cannot be adulterated (unless the nurse be unhealthy), watered, sour, rancid, or otherwise unwholesome.

The following table sets forth at a glance the chemical composition of different varieties of milk, and shows the proportion in a hundred parts, which each elementary principle holds :—

MEAN COMPOSITION OF THE MILK OF VARIOUS ANIMALS.

	Woman.	Cow.	Goat.	Sheep.	Ass.	Mare.
Caseine (cheesy matter) and in-soluble salts.	3.35	4.55	4.50	8.00	1.70	1.62
Fatty Matter.	3.34	3.70	4.10	6.50	1.40	0.20
Sugar of Milk and soluble salts .	3.77	5.35	5.8	4.5	6.4	8.75
Water	89.54	86.4	85.6	82.00	90.5	89.33
	100.00	100.00	100.00	100.00	100.00	100.00

Thus it will be seen that, taken in the order of strength (that is, the amount of solid constituents in 100 parts), these milks will come as follow, beginning with the weakest. Ass, woman, mare, cow, goat, sheep.

It will be seen, too, that, on the whole, the milk of the cow approximates most closely to that of the woman, and that the milk of the ass and mare are as poor in cheese and fat as the milk of the sheep is rich in these materials.

A child under seven months of age should, then, when brought up by hand, be

fed *entirely* upon cow's milk, and since cow's milk is somewhat richer than woman's milk, every pint of it should receive the addition of *about one-third part of water*, so that every pint (of twenty ounces) should, after dilution, form twenty-seven ounces of milk and water.

The milk of a woman as it flows from the breast has the same temperature as the blood, which is 98° or 99° of Fahrenheit. A baby's milk and water should accordingly be heated to the same temperature, or a little higher, as it soon cools in the bottle.

The proper food for a child before it cuts its teeth is therefore a mixture of three parts of cow's milk and one part of water, at a temperature of 98° Fahrenheit.

It is customary to add a little sugar to this mixture, in order to make it palatable to the child. There is no harm in this probably, but on chemical grounds there seems to be no necessity, and the sugar used ought to be the most pure and delicately refined which can be obtained, and great care should be taken not to add too much. The coarse brown sugar used by the poor is no doubt a very bad thing for children.

How much milk and water should be given at a time?—This is a very difficult question to answer with exactitude. The weights and sizes of children at birth differ immensely, some weighing much more than others. Cases are recorded in which a new-born baby has weighed as much as 14 lbs., and as little as 3 lbs. Now, if a child weighs four times as much as another child, it might require four times as much food, so that it is impossible to lay down any absolute rule as to the quantity of nourishment which children are to have. About a quarter of a pint (5 ozs.) may be taken as the maximum amount which should be put at any one time into a child's feeding-bottle. A child, like a grown-up person, will exhibit symptoms of hunger and satiety, and when it shows that it has had enough, the watchful nurse will remove the bottle, and will soon learn the quantity which the infant is capable of taking.

As to the frequency of feeding, the same rule holds good with artificial feeding as with natural feeding. Thus:—

Under 3 months	Every 2 hours
Between 3 and 4 months	„ $2\frac{1}{2}$ „
„ 4 and 5 „	„ 3 „
„ 5 and 6 „	„ $3\frac{1}{2}$ „
At 7 months	„ 4 „

As the intervals between the times of feeding get longer, the quantity given at any one time should be proportionately increased. A child should never be roused from its sleep for the purposes of feeding, and, on the other hand, feeding at odd times should never be resorted to as a means of quieting a noisy child. Regularity in feeding is of the greatest consequence, and if the rules laid down be departed from, the child will suffer from wind and colic and all the troubles which follow on repletion. A child which is brought up by hand must be fed from an *infant's feeding-bottle*. Good serviceable feeding-bottles are easily obtained, and are very cheap. They must be simple in construction, and easy to wash out and keep clean. A feeding-bottle may be easily extemporised. To do this, take a clean soda-water bottle, fit it with a good cork; perforate the cork so as to admit the passage of a piece of glass tubing. The glass tube should pass to within a quarter of an inch of the

bottom of the bottle, and should project half an inch or an inch beyond the cork. To the upper end of the tube fit a piece of india-rubber tubing about ten inches or a foot long, and furnished with a nipple at its extremity for the child to suck. The tubing and nipple may be obtained at any of the india-rubber shops, which are now tolerably common in all large towns. Feeding-bottles form part of the stock-in-trade of every druggist in the country.

A feeding-bottle must be kept scrupulously clean.—If this is not done a child may, or rather will, be made seriously ill. The tendency of milk to become sour and rancid is too well known to need comment on our part. It is difficult to keep milk sweet, even in a cool, clean dairy; it is doubly difficult to do so when the milk is kept in a warm place, as a child's feeding-bottle invariably is and must be. Milk must not be allowed to lie in a bottle longer than is absolutely necessary. When the child has done feeding, the bottle must be emptied immediately, and the milk which it has left must be thrown away. It must on no account be kept for the child's next meal, as it is very false economy to run the risk of giving the baby sour milk for the sake of saving that which is of less value than a halfpenny. When the bottle is empty it should at once be scalded out and completely dried. The tube and stopper will want very careful cleaning, and water must be sucked and blown through the tube, and every visible particle of milk most carefully removed from it. A particle of milk no bigger than a pin's point, if left on the cork, or on the under surface of the cap-stopper, or in the glass tube, or in the india-rubber tube, will, to a certainty, go sour. Between the meals it is a good plan to keep the tube and cork always in water, but it must be remembered that mere keeping in water is not sufficient to thoroughly cleanse, and that the particles of dried milk, &c., must be carefully removed with a brush or by rubbing. Always smell the bottle to ascertain whether the well-known odour of acidity adheres to it. Smell especially the cork and the tube, which are the spots where acidity is most likely to be detected. It is a good plan to keep blue litmus test-papers at hand with which to test the milk. Milk should never do more than turn a test-paper dipped in it a delicate pink. If it turns a bright red it shows a dangerous degree of acidity, and such milk must be rejected. In hot weather, and whenever milk has to be kept for any length of time, it should be boiled at once, which prevents, to a certain extent, the tendency towards acid fermentation.

If the milk disagrees with the child—if it forms curdled particles, or if it pass in curdy white pieces from the bowels—this may be taken as an indication that the milk (or mixture of milk and water) is too strong, or that it has a slight tendency to sourness when given, or that it is too quickly curdled by the acid secretions in the child's stomach.

First, try diluting the milk, and instead of giving two-thirds milk and one-third water, try a mixture composed of equal parts of milk and water. Usually this will be found a sufficient measure to counteract the evil. If it be not so, the milk must be boiled before being administered, and if, in spite of these two measures, the child is found to suffer still from indigestion, a portion of *lime water* must be added to the milk and water. Lime water is a solution of ordinary builder's lime in water, and it is not to be confounded with lime juice, which, being the expressed juice of a variety of lemon,

is a totally different thing. Lime water may be made by putting some fresh lime (not previously slaked) into a bottle, filling the bottle with water, and keeping it constantly and closely corked or stoppered. It must be allowed to stand until the lime has subsided to the bottom of the bottle, and the clear water on the top will be found to have a slightly alkaline taste (somewhat suggestive of old-fashioned soda-water), from the small quantity of lime which it holds in solution. When the use of lime water becomes necessary, a table-spoonful may be used in the place of an equal quantity of water in each bottleful of milk and water. Lime water is a very useful thing in the nursery, and it is well that every nurse should make herself acquainted with it. It is given to counteract the acidity of the milk before it is taken, or the tendency to turn acid after it is in the child's stomach.

Every feeding-bottle should be provided with a flannel cover, in order that the heat of the milk may be longer retained. The covers should be thick and padded, and should resemble in construction the familiar "tea cozy," the objects fulfilled by which they are meant to imitate. In spite of these covers, however, the milk has a tendency to cool too rapidly, and it is as well, perhaps, to make the mixture two or three degrees higher than the exact temperature we have indicated.

Give a child no starchy food until it cuts its teeth.—To write that "*pap is an abomination*" will seem to many of our readers to be a doctrine full of heresy; but it nevertheless is true, and we have no hesitation in asserting that those nurseries will be the healthiest in which pap is not known. Starchy or farinaceous food includes bread, biseuit, rusk, baked flour, corn-flour, tapioca, sago, rice, arrowroot, potato, and all allied articles; and we cannot too strongly impress upon our readers the fact that children are quite unable to digest such things, and that the giving of them is certainly the chief cause of "wind" and those other forms of indigestion which are so serious a drawback to the healthy development of a child. Starch in all its forms must be mixed with saliva, and must be thoroughly chewed before it can be digested. The indigestibility of new bread is chiefly due to the fact that, owing to its consistence, we often bolt it, instead of chewing it carefully, and mixing it with saliva. Now, very young children do not secrete much saliva, and what there is is incapable of acting upon starch so as to help its digestion. As they have no teeth it is manifestly impossible for them to give the all-needed chewing to starchy food; so that on these two grounds it will be evident that toothless children must not be fed upon the prohibited "farines."

Many patent foods are advertised in the present day. Very strong assertions are usually made in these advertisements as to the advantage of feeding children upon these patent articles. Since, however, they, one and all, contain farinaceous material, we should say that, despite assertions to the contrary, they are not to be given to very young children.

We cannot too often repeat that which is too often forgotten, viz., *that milk should be the SOLE food of the human infant until it begins to cut its teeth.*

Suppose a child cannot be suckled by its mother, and cow's milk is not to be obtained. How shall we then proceed to nourish it? Clearly, the proper thing to do is to give it the milk of some other animal, and either the mare, ass, sheep, or goat may be used for this purpose, and it will be found that infants very soon

become accustomed to the milk of either of these animals. Ass's milk is recommended by some physicians as more easy of digestion than cow's milk, and peculiarly suited for children of weakly constitution and low digestive power.

If fresh milk is not obtainable, recourse may be had to condensed or preserved milk, which has proved a great boon to children dwelling in large towns, where good milk is difficult to obtain. It has been the custom for many years to condense milk by evaporation for use on board ship, and latterly milk has been prepared in this country, and imported from Switzerland, which is not only condensed, but has a considerable quantity of cane sugar added to it. This preserved milk, which is sold in tins hermetically sealed, will keep for years if not opened, and a tin of it, even after opening, will keep sweet for three or four days. The following analysis of three varieties of preserved milk is taken from Dr. Pavy :—

	Anglo-Swiss.	Aylesbury.	English.
Caseine . . .	18·52	17·20	16·30
Fatty matter . .	10·80	11·30	9·50
Sugar of milk . .	16·50	12·00	17·54
Cane sugar . . .	27·11	29·59	27·06
Ash	2·12	2·24	2·39
Phosphoric acid . .	·649	·67	·708
Water	24·30	27·00	26·50
	<hr/> 100·00	<hr/> 100·00	<hr/> 100·00

One great fault in all these preserved milks is the amount of sugar they contain, which is undoubtedly too much. The sugar is added as a preservative; but we doubt whether it is altogether suitable for a child in such large quantities. Children undoubtedly do well on condensed milk, and it has been remarked that they get very fat, which is no wonder, seeing that fat-producers (cream, sugar of milk, and cane sugar) are in such large proportions in their diet.

Besides the condensed milks we have noticed above, there are many other varieties. The public at present have no adequate guarantee of the genuineness of these hermetically-sealed articles. If they buy cow's milk at a shop, they know that they have their remedy at law if the cream be deficient or the water in excess; but in buying "preserved milk" they are obliged to take with the milk as much sugar or other preservative as the manufacturer chooses to send, and they have no remedy. We think that every tin ought to have upon it a plain statement of the composition of its contents, and then, should they be found on analysis not to agree with the description, the vendor would be punishable. The public ought to be protected in every possible way, since the importance of giving wholesome food to children is not to be over-estimated. If nothing but skim milk is obtainable for children, it is a good plan to boil some suet with the milk, and in that way the fat, which has been removed by skimming, is replaced.

The following method of making artificial milk has been devised by M. Dubruffaut, and is taken from Dr. Edward Smith's work on food :—"Half a pint of water, one and a quarter ounces of cane or grape sugar, half an ounce of dry white of egg, and fifteen grains of carbonate of soda; to be made into an emulsion whilst warm with one and three-quarters or two ounces of the finest olive oil, or some

other pure fat. This compound will be as thick as cream, and another half pint of water must be added to make it of the consistency of milk. The addition of a little gelatine—say twenty grains to the pint—will increase the resemblance of the compound to cream, and will allow more water to be added.” Liebig has devised a food which is intended to be a chemical imitation of woman’s milk, and fit to replace it when the natural nourishment for a child is not obtainable. The following method of preparing it is taken from Dr. Pavy :—

“Take half an ounce of wheat flour, half an ounce of malt flour, and seven and a quarter grains of bicarbonate of potash, and after well mixing them add one ounce of water, and, lastly, five ounces (a quarter of a pint) of cow’s milk. Warm the mixture, continually stirring over a very slow fire till it becomes thick. Then remove the vessel from the fire, stir again for five minutes, put it back on the fire, take it off as soon as it gets thick, and finally let it boil well. It is necessary that the food should form a thin and sweet liquid previous to its final boiling. Before use it requires to be strained through a muslin or fine hair sieve, to separate fragments of husk that may remain.

“To avoid the trouble of weighing, it is mentioned that as much wheat flour as will lie on a table-spoon corresponds with an ounce, and that a moderate table-spoonful of malt flour corresponds with half an ounce.

“It is malt made with barley that is to be used, and a common coffee-mill answers the purpose of grinding it into flour, which is to be cleared from the husk by a coarse sieve. The bicarbonate of potash is added to neutralise the acid reaction of the two kinds of flour, and also to raise the amount of alkali in the food to the equivalent of that in woman’s milk.

“The ferment contained in the malt leads, during the exposure to the warmth employed in the process of preparation, to the conversion of the starch of both the flours into dextrine (a gummy material) and sugar, the latter of which gives the sweet taste that is required. The newly-formed products, also being soluble, account for the mixture becoming thin, and it is a point contended for by Liebig that principles in this state tax the digestive and assimilative powers of the infant much less than starch.”

A recommendation, backed by the great name of Liebig, of course deserves attention; but we would, with great deference, express our decided opinion that these and similar artificial foods should be given only when pure milk is not to be obtained, or in those very rare instances in which pure milk in all forms produces diarrhoea and indigestion. A child ought rarely to take Liebig’s Food until it is weaned, or until it has begun to cut its teeth. If the mother has no milk, the baby may take the cow’s milk mixed with a third part of water; but we think the other ingredients had better be omitted as superfluous until the child has acquired some power of digesting complicated foods.

Upon sugary foods a child will certainly grow fat; but it must be borne in mind that because a child is fat it does not necessarily follow that it is strong also, and, indeed, the opinion has been expressed, that children fed upon the highly saccharine preserved milks succumb more easily than others to the attacks of diarrhoea and other maladies to which children are liable. There is no question that these preserved

milks are very valuable productions, and are a perfect boon to the poor inhabitants of cities; but we think very strongly that they should only be used *faute de mieux*, and those who are fortunate enough to command an ample supply of fresh milk from a healthy cow should give it in preference to any hermetically-sealed imports.

Children are occasionally met with who do better on artificial and condensed milks than on the pure article. Such cases are wholly exceptional, however; and whenever pure milk is to be got, it must be tried before having recourse to any artificial foods.

WEANING.

Directly a child begins to cut its teeth, and certainly as soon as four teeth have made their appearance, the process of weaning should be commenced. Prior to the process of dentition, a child is capable only of the act of suction, and its tender, almost rudimentary, jaws would be incapable of chewing, even supposing the necessary teeth were present. The appearance of the teeth, however, may certainly be taken as an indication that the jaws are to commence work, and the fact that the front teeth appear first would seem to be a beautiful provision of Nature for compelling the mother to think of discontinuing her nursing at the beginning of, instead of the end of, the first dentition.

It very often happens that the appearance of the teeth is considerably delayed, and it not unfrequently occurs that a child may be more than a year old before it begins to cut its teeth. What ought to be done in such cases? We think decidedly that the weaning ought not to be delayed, but should be commenced at nine months at the latest. Very few women are capable of properly nourishing a child for more than nine months, and a continuance of the act of suckling after that period is mischievous alike to the mother and child—mischievous to the mother by causing an undue drain upon her vital powers, and mischievous to the child because the nourishment furnished by the exhausted mother is not strong enough to ensure its healthy development. When the teeth are delayed in a child who has been kept absolutely to the breast, it may well be questioned whether the condition of the mother is not the cause of the delayed dentition.

It is very much the custom of the women of the labouring classes to over-suckle their children, and there can be no doubt that the practice is fraught with great danger to health. Over-suckling is often, no doubt, the result of ignorance; often, perhaps, a weak-minded woman is unable to make up her mind to sever that intimate bond which unites her offspring so closely to herself; but more often we believe that it is a custom resorted to with the avowed intention of placing a barrier against future pregnancies. The families of the poor are very apt to outgrow the straitened circumstances of the parents, and the woman, in the ignorant hope of delaying pregnancy, resorts to the dangerous practice of over-suckling. It cannot be too generally known that over-suckling is no barrier to pregnancy, and it is an every-day occurrence for a nursing mother to become aware that the darling at her breast must, in a few short months, be deposed in favour of another little stranger.

Although over-suckling is powerless to prevent pregnancy, it seems to have a very decided and a very baneful influence on the health of the child with which

the mother is pregnant, and there is good reason to believe that the common disease called rickets is very largely dependent on a disregard of a natural law for which common sense, if no higher motive, ought to ensure respect.

How is a child to be weaned?—This must be effected gradually, and at first, perhaps, there is no better plan than the substitution of an artificially-prepared meal twice in the day in lieu of suckling. The meal should measure a quarter or half a pint, and should be given in a feeding-bottle, and should consist of warm milk and water thickened with baked flour.

Baked flour is preferable to raw flour, because it is more digestible. The action of the heat upon the starch granules of the flour causes them to burst and become more easy of digestion, and, further, a chemical change takes place, whereby some of the starch is converted into *dextrine* or gum, which dissolves more readily than blue starch. Baked flour may be prepared by putting the flour in a basin and simply placing it in the oven, or it may be tied up in a basin and boiled. In this the flour dries into a hard mass which needs to be broken and powdered before being used.

Baked wheaten flour is probably the best thing possible to thicken a child's milk with. It is certainly to be preferred to the so-called "corn flours," which are too often merely pure starch, whereas wheaten flour contains nitrogenous and other valuable dietetic principles in addition to the starch, which is, no doubt, its most important constituent.

The next best thing to baked flour is well-baked bread, got from a reliable baker who does not mix potatoes or alum with the staff of life. The bread must be thoroughly baked, *i.e.*, the flour must be thoroughly cooked. It is this necessity which has made such a favourite food of the old-established Robb's Biscuits, and the various kinds of rusks and tops and bottoms, which are always in great demand wherever young children are to be found.

Many patent foods are advertised, and are very much used for children, but of the exact composition of these foods we are ignorant, and it therefore becomes impossible for us to recommend any of them, or to say that any one is either better or worse than another. They are chiefly composed of baked flour of some kind, mixed, in some instances, with preserved or dried milk. One thing at least seems to us to be certain, that none of them can by any possibility be more wholesome or more nutritious than baked wheaten flour and new milk. The Liebig Food, which we described, and the administration of which at too early a period we condemned, may be used with advantage as a weaning food.

The process of weaning would, under ordinary circumstances, be commenced when the child is seven or eight months old, and the substitution of prepared meals for the breast ought to be gradually carried out until, at the end of the ninth or tenth month, it has become wholly independent of its mother. Some children are said to be easy to wean, and others are said to be weaned with difficulty. The real difference, we believe, is to be found in the amount of tact and patience which the mother is able to bring to bear upon the matter. It is necessary to be firm and methodical with a child, and if at first it refuse the bottle, it will, with a little coaxing, "come round," and, having had its cry out, will take to its new course of life.

A child should not have more than two allowances of thickened milk per diem,

and the mother's milk should be replaced in the main—at least at first—by cow's milk and water.

Food after Weaning.—When the process of weaning is thoroughly completed—that is, at about the age of ten months—the child may begin to take a little thin broth or beef tea, which should be given to it once a day instead of one of its meals of milk and water.

At this time an attempt should be made to discard the bottle, and to feed the child with a spoon. Beef tea and broth ought never to be given from a bottle, and when the bottle has been discarded, the child will be less open to two dangers: the danger of over-feeding, and the danger of receiving sour milk. The diet of a child should be entirely restricted to milk and water, thickened milk, and beef tea, until it is a year and a half old, at which time, if healthy, it will have cut nearly all its teeth, and will be able to grapple with a little solid meat.

At two years of age all the teeth will have been cut, the period of infancy comes to an end, and that of childhood begins. The child is no longer a helpless baby. It begins to stand, to walk, and to prattle, and is capable of eating and digesting stronger and more complicated food than heretofore.

Milk should constitute the *pièce de résistance* of the nursery, and it ought to enter largely into all children's meals. A cup of bread and milk nicely sweetened is what all children like for breakfast. Milk and water or pure water should be the only beverages for young children, and a milk pudding at dinner is a wholesome and pleasant addition to their simple fare.

One meal of meat, in the middle of the day, is all that young children require. The youngest may have bread-crumbs and gravy, the eldest should have pieces of meat big enough for them to chew, and the nurse should ever be on the watch to see that they really do chew their food. The sin of "bolting" food should always be repressed, since it is sure to lead to difficulties of digestion. Children who are too young to properly chew their food will require to have it cut or minced for them, and this is a matter which demands a little thought from the mother or nurse. *Do not mince the food into little solid square pieces.* If this is done, the child bolts them whole, and they arrive in the stomach in the most indigestible form imaginable. Meat for a child too young to chew should be very finely pounded or shredded, so that the actual fibres of the meat are torn asunder. If this be done, the juices of the stomach will be able to act upon it. Nothing is better, perhaps, for a young child, than a *purée* of meat rubbed through a fine sieve or a "*purée cloth*." Red meats are better and more nourishing for children than white; and mutton and beef are preferable as nursery diets to the white flesh of poultry.

Bread and butter is, in this country at least, the chief form in which children take their farinaceous food, and no better form can be devised, because it cannot be swallowed without thorough mastication.

Potatoes should never be given until the child has cut all its teeth, and then great care should be taken that the potatoes are not too young and are thoroughly boiled. Green vegetables may be given in small quantities at two years and a half.

Neither fruit nor vegetables should ever be given to very young children in a raw state, unless exception be made in favour of strawberries, currants, and raspberries,

which may be allowed as an occasional treat. They should, however, be carefully smashed up before they are given.

Jams and preserves are always highly appreciated in the nursery, and preference is to be given to jellies and to those preserves which are free from stones and seeds. Marmalade, which is, or ought to be, largely composed of orange-peel in a very indigestible form, should never be given. Children are fond of treacle, and this is a wholesome and economical food in which they may be allowed to indulge moderately.

Pasties and thick "stodgy" puddings are very indigestible to the young, as are all combinations of flour and butter. They may be, and are, allowable for the school-boy, who is strong, and participates eagerly in all manner of athletic games, but in the nursery they should never be tolerated. Plain boiled rice, with sugar or preserve, or stewed fruit, is the best and safest nursery pudding. All dried plums and currants which are liable to be swallowed whole should be tabooed.

Never force a child at its food.—If the child has a healthy appetite it will eat whatever is put before it. If it leaves its food, or plays and dawdles over it, it is not a good plan to press it, and it is worse than useless to be angry with it. The best way is to tell the child not to eat if it does not feel inclined, and then, if the loss of appetite is due to some passing cause, the natural craving for food will have returned by the next meal-time. If it does not return, then the question arises, whether or no the child is really out of health, and if such be the case, it will generally be necessary to throw the child back a stage in its diet, and confine it to fluid nourishment.

Never try and tempt a child's appetite with improper food.—This is often done; and we recall to mind the case of a poor woman who brought her child to us suffering from signs of incipient consumption. The following conversation took place:—

"How old is your child?"

"A year and nine months, sir."

"And how many teeth has it cut?"

"Oh, sir, it is very backward with its teeth, and has only cut ten."

"Does it take its food readily?"

"Oh no, sir; we have a very great difficulty to get it to take anything. It is very taffety, and is wasting away to nothing. I try it with everything I can think of, and on Saturday night I took it out into the 'New Cut' and tried to tempt it with a penn'orth of pickled whelks, but it would not eat even them!"

This was the most glaring example we have ever met with of what we believe is a very common error in a milder degree among the mothers and nurses even of the middle and upper classes, and this poor woman who made an unsuccessful attempt to fill her delicate child's weak stomach with food as tough and indigestible as india-rubber has her imitators in all ranks of society. If a child's appetite fails, it is the common and baneful practice to try and tempt it to eat with all manner of trash. Many a child who has died of a fatal diarrhoea, or of tubercular disease of the bowels or mesenteric glands might no doubt have been saved if its nurse had only been blessed with a little knowledge and a little common sense.

At the Royal Infirmary for Children, in the Waterloo Road, London, it has been the invariable custom to take the temperature of every child night and morning

with a thermometer. This has been done because the temperature of the body is one of the surest gauges of the state of health, and a rise of temperature generally precedes the other symptoms in case of a child being attacked with any of the diseases of infancy (such as measles or scarlet fever), which would necessitate its immediate separation from the other children. Now, it has been found that the temperatures of children have a strange disposition to rise on those days when the children are visited by their friends, and the cause of this has been traced to the fact that, in spite of notices and warnings to the contrary, the foolish friends of the little patients will smuggle in all manner of edible trash—jam puffs, green apples, lollipops, and the like—and the temporary state of fever into which they are thrown is due to the indigestion caused by the consumption of these (to them) almost poisonous articles.

Provided that all the articles of food set before a child are wholesome, it should be allowed to exercise its own discretion, taste, or instinct in the rejection of, or preference for, any particular article of diet. Many children—most children, in fact—will not eat fat, and it is common to see them leave all the pieces of fat at the sides of their plates, and restrict their attention solely to the lean. The “leaving of fat” is a very common *casus belli* in the nursery, but it ought not to be, and if a child dislikes it, we should say, *Do not give it any*. A big slice or lump of yellow, greasy, slimy fat is not an appetising thing to look at, and although we have acquired a taste for it, we should remember that such taste has undoubtedly been *acquired*, and will be acquired in time by our children. There are many ways of giving fat in a form which is more pleasant to the child than in tangible slices or lumps. New milk contains a quantity of fat, and a bread and butter pudding, or bread and butter itself, is of course very rich in it. The yolk of an egg, too, contains a large quantity of fat, so that a little consideration will enable us to give a child as much fat as is necessary or good for it without shocking its tender sensibilities.

The nursery beverages, as we have mentioned above, should be *water* and *milk and water*. The sole nursery condiment should be *salt*.

Tea, coffee, beer, or wine, are unnecessary for young children, and should be entirely withheld. Occasionally, when a child is recovering from some acute disease, it becomes necessary to stimulate the appetite a little, and at such times a little wine and water may be allowed. Weak natural wines are the best and most wholesome for young children, and they very soon learn to appreciate a small quantity of claret, or Burgundy, or white Rhenish wine. Port and sherry, as sold in this country, are far too strong for young children (and, indeed, for the matter of that, for adults also), and if the light wines are not obtainable, it is advisable to fall back upon beer.

Children and adults should never have their meals together.—Such a plan is bad for the children, and disagreeable for grown-up persons. The diet of adults is not suitable for young children, and, among the poor, one of the main causes of infantile disease is undoubtedly the habit which obtains of feeding their young children upon “the same that we have ourselves.” Nurses ought never to have their dinner with the children, but should first give the children their dinners, and go and dine themselves in another room. The habit, which is too common in England, of allowing children, especially on Sunday, to come into the dining-room while dinner is on the table is a very bad one, and when we see children allowed to be so ill-mannered as

to pester guests, and to have a piece off mamma's plate, and a sip out of papa's glass, we feel that if those children are laid up, it will be due entirely to the folly of their parents.

MANAGEMENT AFTER WEANING.

Sleep.—A new-born child passes the greater part of its time in sleep. It wakes up when hungry, and having satisfied its hunger, it falls asleep again. It dozes quite twenty out of the four-and-twenty hours. As it grows, it shows a gradually-increasing power of doing with less sleep, but few healthy children under two years old sleep less than twelve or thirteen hours.

It is necessarily of the greatest consequence that a child's sleeping quarters should be comfortable and wholesome. Every child should have a cot for itself, and the room in which it is placed should be thoroughly clean and well ventilated. The bed-clothes should be removed as often as they are soiled, and they should be protected by a piece of mackintosh sheeting, placed under the child's middle. The bed should be thoroughly made once in the four-and-twenty hours, and the clothing should be exposed to the air for an hour every day.

It is not a good plan for children to sleep in the same bed with their parents, and it is far better for them to lie in a separate cot by the side of their mother's bed. If they sleep in the same bed, they are very apt to get their heads beneath the bed-clothes, and in that case they do not breathe the utterly pure air which is necessary for them. Further, it is not uncommon to hear of children being killed by "overlying"—that is, by suffocation during the night, by their parents lying upon them. In most of these cases, no doubt, the parents have been tipsy, but the fact that young children do get actually suffocated when lying in their parents' bed makes it highly probable that many more narrowly escape a similar fate, or, at least, suffer considerably from breathing an impure atmosphere.

Another reason why a child should not sleep with its mother, is the temptation which the latter has to over-feed it. If a child cries in the night, it is the routine with many mothers to give it the breast, and this irregular feeding at night is very often the beginning of serious digestive troubles.

A child will sleep two or three hours at a stretch, and if it be healthy it will not cry nor disturb anybody. The inference may, in most cases, be drawn with safety that a good, quiet child is a healthy child, and that a noisy, fractious, crying child is not well. In this latter case, the worst thing that can be done to it is to overfeed it, which is generally merely adding fuel to the fire; and although one may succeed in this way in quieting it for a time, the result in the end is to perpetuate its noisy condition. A baby must be fed at its fixed proper time, and at no other, and if it cries between these, it should be nursed, and search should be made for anything which may be causing it uneasiness. The napkins should be changed; the state of the feeding-bottle (if it be using one) should be looked to, and the condition of the mother's health should receive consideration. Perhaps the child may need a dose of purgative medicine. Perhaps it is cutting a tooth, and the gums may need lancing, or the child may be quieted by giving it something, as a coral or a bit of india-rubber, against which it may press the gum. We cannot pretend to discuss all

the possible causes of a child's wakefulness, but whatever they may be, it can never be right to feed it too often, and it is never justifiable to administer soothing syrups or soothing powders, or any form of narcotic medicine, all of which are literally slow poisons, and highly dangerous.

It has further been alleged, with regard to the practice of children sleeping in the same beds with their mothers, that it is very liable to cause *ophthalmia*—that inflammation of the eyes which is such a scourge to young children, and which not unfrequently ends in loss of sight or permanent disfigurement and impairment of vision. The cause of the *ophthalmia* is found in the fact, that the child sleeping with its mother often falls asleep in the act of suckling, and then the milk or perspiration, getting into the eye, act as irritants, and cause the inflammation. Such a result is only to be found, probably, among the dirtiest of the poor, but its occurrence from the cause stated should make nurses very careful not to run any unnecessary risks.

Exercise.—Children want a great deal of fresh air and exercise. The air which a child breathes should always be as fresh as possible, and a good nurse will always bear a watchful eye to the ventilation of the rooms in which it lives. A nursery should be light and airy, for sunlight is, probably, almost as important for the healthy development of children as air itself. The windows should be thrown open at least once a day, and every means for the artificial ventilation of the room should be attended to. The room should not, of course, be cold and draughty, but it is quite possible to obtain fresh air without these disagreeable concomitants.

Every facility should be given, even to a newly-born child, to kick and throw its arms about, and exercise its limbs in every way that Nature dictates. The habit which is common throughout Germany and in many northern countries, of using "swaddling clothes," which are wound round and round a child until it looks more like a cocoon than anything else, is thoroughly bad, as it prevents freedom of movement in the lower limbs. Not only is freedom of movement prevented in this way, but ventilation of the legs is rendered impossible, and although it is important, no doubt, to keep a child's legs warm and free from cold draughts of wind, it is scarcely less important to ensure a free circulation of air beneath the garments.

The habit of using swathing bands and binders round the abdomen is bad, because it tends to confine the movements of the child's chest, and to impede the healthy action of respiration. Immediately after birth, it is necessary, no doubt, to encircle the abdomen with a broad band of flannel, but great care should be taken to ensure that it is not too tight, and it should be discarded altogether as soon as possible.

On the whole, perhaps, there is no better form of garment for young babies than the "long clothes" which are common in this country. They keep a child warm, they protect it from draughts, and at the same time allow of the free exercise of the limbs, and provide for a healthy circulation of air around them.

When a child is a month old it should, if the weather be suitable, be taken out of doors for a short time every day. The best vehicle for it at first is its mother or nurse, in whose arms it must be carried. Care must be taken to keep the child in a recumbent position—lying down, that is—and to support the back thoroughly with the left arm. Children should not be allowed to get their backs bowed while they are in their nurses' arms. If a child shows any inclination to sit up, it should be allowed

to do so, as the exercise of the muscles of the back for a time will tend to strengthen them. In the present day, the nurse's arms have been largely superseded by "perambulators," and even the youngest babies may be accommodated with a little carriage, in which they can lie at full length, in a state of complete repose. There is a great advantage in using these handy little carriages, for the nurse is not only saved the weight of a burden, but the child is not dependent upon the state of fatigue or freshness in which its nurse happens to be. Great care should be taken not to jolt a child unnecessarily when it is riding in a perambulator. This is the one point in which a perambulator is a less desirable conveyance than the nurse's arm, but the jolting of which we speak depends upon the carelessness or stupidity of the nurse, rather than any inherent defect in the vehicle. Every perambulator should have the tyres of the wheels furnished with vulcanised india-rubber bands, which help to break the shock of any accidental concussion. In crossing streets, in going over inequalities in the roads, and in going up or down steps, great care ought always to be taken to lodge the front wheel securely, and to support the hind part of the perambulator, as the two back wheels are allowed slowly to follow it. It is no uncommon thing to see nursemaids wheeling perambulators who have, evidently, not sufficient intellectual capacity to give a thought to the well-being of the tender occupant of the carriage. They swing it on to its hind wheels, and thus tilted backwards with its fore-wheel in the air, they proceed to cross a street. It is a piteous sight to see the poor baby undergo a kind of temporary collapse, as the loud bump with which the carriage falls off the curb-stone tells of the severe shock which has been communicated to the spinal column of the child. "Do as you would be done by" is the greatest of the Christian tenets; but what would these careless nursemaids think if they were placed in a carriage, and allowed at intervals to fall two or three feet, without break of any kind? Any nurse who is careless in such a small but nevertheless important matter is not fit to have charge of a baby.

While a child is in the open air, it is of much importance to protect it with great care from cold, and also from the heat of the sun. A child should always be well wrapped up, and in windy weather its face should be protected by a veil. Its head should have a warm covering, which should be fastened by strings—a knitted hood with a string let into the border is the best thing. Elastic, going under the chin or behind the ears, should never be used. It is impossible to regulate the pressure, and it is very liable to chafe and rub, and cause sore places.

The heat of the sun is very much felt by young children, and every perambulator should have a big hood, with an additional sunshade fixed to the front of it, so that a child may be completely screened, when necessary, from the scorching rays of the sun. Many an attack of tubercular meningitis has been determined by the negligence of a nurse in this matter.

Older children who are no longer dependent for their locomotion on nurses and perambulators ought to be provided with hats of a proper shape. They should be somewhat high in the crown, so as to include a layer of air between the crown of the hat and the top of the head. In this way the head will be kept cool, and there will be no danger of the direct rays of the sun causing a sort of sunstroke, with all its dangerous symptoms and consequences.

Education.—*The education of a baby should be commenced as soon as it is born.* This may seem a strong assertion, but we feel sure that it is a right one. We do not mean by education its intellectual training, but rather its moral training. “Manners make the man” was the good motto chosen by William of Wykeham, and it should be constantly borne in mind by parents and nurses. We have endeavoured in this article to lay down certain fixed rules for the guidance of those who have the care of young children. Those rules are the result of long experience combined with scientific reasoning. They have been practically ratified by all the best authorities, and those who adhere most firmly to them will have the least trouble in bringing up their children.

The rules we have laid down, then, are not to be departed from merely because a child is troublesome. If, for example, a child is fed every time it cries, it soon gets to know that it has but to bellow to be sure of obtaining what it wants, and by yielding to its desires against our better judgment we are instilling into the almost unconscious infant a lesson in selfishness and gluttony which perhaps it may never forget. A habit once formed is not easily shaken off, and the jar which the compulsory cessation of a bad habit causes gets more difficult to bear every day that the child lives. By giving way to a baby we are, in fact, pickling the rod which is to make it smart a few years hence. If the mother or nurse of a child is reasonable, and does not yield to its every cry, the child soon ceases to connect together the two acts of crying and feeding, and stands less chance of becoming self-willed and gluttonous than its fellow who perhaps has received less judicious management. A habit scarcely less harmful than that of feeding a child whenever it cries, is the one of *giving it something to suck* to keep it quiet. It is a common thing in the dwellings of the poor to see the baby lying in its cradle, and sucking a piece of flannel which has been given it by its mother. Can it be wondered at that a child who has been taught so filthy a trick should grow into a listless, idle, self-indulgent creature? When, a few months hence, it takes to sucking its thumb, the foolish mother will probably administer many a slap, because the poor child perseveres with the very trick which she has so carefully taught it.

There are other matters which a child may be taught very young indeed, and we should advise every nurse to begin, when the child is a month old, to try and teach it a periodical observance of the calls of nature. If a child be fed at regular fixed times, and have its napkins removed at stated intervals, and be placed so that Nature’s dictates may be obeyed and facilitated, it is surprising how soon it will learn to take advantage of these opportunities which are afforded it. We have no hesitation in saying that some children are as forward in these matters at four months old as others are at two years, and the sole reason for this difference is to be found in the fact that the former have been “educated” with a little trouble, while the latter have been allowed, as the Scotch say, “just to gang their ain gait.” Young children should never be needlessly placed in temptation, and for this reason it is advisable that the denizens of the nursery should be kept as much as possible to themselves. When the adult and infant members of a household mingle together, either for purposes of feeding or otherwise, it is not to be expected that the former will be constantly under restraint for the sake of the latter, and it should be borne

in mind that it is almost a real hardship for a child to see others doing sundry things, and eating sundry things, and to be told that such things "are not for little children."

It is very hard to deny the child we love, and much spoiling of children is brought about by the unnecessary mingling of children and adults at meal-times and on other occasions. Among the poor, who necessarily inhabit the same rooms as their children, improper feeding is the rule, and the number of children who fall ill, because, as their friends say, "they eat the same as we do," is hardly to be told.

We have said that in writing these few paragraphs we had not in view the intellectual education of the child, but a few remarks on this subject may not be out of place.

One great error is to allow children to learn things wrongly, and we not unfrequently see babies who have been taught to speak in the nursery being untaught in the parlour. This, of course, is very greatly to be regretted, as it leads to the necessity of correction, where no need should have existed, and it should be borne in mind that correction is always galling to a greater or less degree. It is never wise to push a child too much. If it be a backward child, we shall not do much by incessant teasing; and if it be a forward child, we shall probably do harm. Great mischief is often done by taking too much notice of children, and this is another of the evils which are likely to result when young children are allowed to mingle too much with adults. It is a most disagreeable spectacle, we think, to see a poor little child pestered to repeat its few foolish words to a select circle of admiring friends; and the end of such spectacles not unfrequently is "a scene," for the child gets over-excited, and then dissolves in tears. If there is any tendency to tubercular disease, great care ought to be taken not to excite children in this way, for every excitement of this kind causes a flow of blood to the brain, and this may often be the determining cause of tubercular meningitis.

DOMESTIC SURGERY.

THE object of these papers on domestic surgery will be, not the perfectly futile and mischievous one of attempting to make every one his own surgeon, but only to furnish our readers with such simple rules for the treatment of the slight accidents and emergencies of every-day life, as are commonly treated without resorting to medical advice. At the same time opportunity will be taken to point out those circumstances which indicate the necessity for immediate recourse to a medical man, and the rules laid down must be regarded as only preliminary to his arrival, and on no account to be insisted on should he, from the special nature of the case, see fit to carry out some different mode of treatment. Great harm may be done to a patient by injudicious meddling on the part of a well-meaning, but only partially-informed friend, who, finding the treatment being pursued under medical advice different from that here laid down, should venture to express disapproval, and shake the confidence of the patient or his friends in their medical adviser. When a case has once been undertaken by a medical man, it is only just, and for the patient's own interest, that the surgeon should be treated honestly, his directions fairly carried out, and his prescriptions attended to. If a patient or his friends are dissatisfied with their medical attendant, it is always open to them to have further medical advice.

There are certain affections which are commonly denominated "surgical," because they require some manual attention on the part of the attendant. These will be briefly discussed, in order to point out how far they may with safety be treated domestically, and when it will be desirable, and even essential, to have professional advice. Opportunity will be taken, in connection with these subjects, to describe the modes of preparation of poultices and other applications of household surgery, which, though they are, in fact, matters of every-day requirement, are frequently mismanaged.

It may be here remarked how essential for relief in these surgical affections it is that there should be no concealment of symptoms from one's medical adviser, on account of scruples, no doubt honourable, but misplaced, because of the so-called "delicacy" of some of the subjects involved. Valuable lives (as, for instance, that of Caroline, queen of George II.) have been lost from the concealment of the existence of a rupture; and many persons live a life of discomfort for years, and even allow their health to be undermined, through the concealment of some affection of the lower bowel which could be readily remedied by medical advice.

HÆMORRHAGE.

Bleeding, which is a constant accompaniment of accidental cuts and wounds, is always very alarming to non-professional bystanders, and it occasionally happens that for want of knowing how to arrest it readily, serious results occur before the

arrival of professional aid. In order to be able to stop bleeding the reader must understand that blood may be poured out in two ways—1st, pumped out in jets of a bright red colour, in which case one of the *arteries* which convey the blood from the heart to the surface is wounded; or, 2ndly, it may flow out in a dark-coloured continuous stream from the *veins* which return the blood from the limbs to the heart.

It is evident, then, that the wound of an artery of large size will give rise to the most serious form of bleeding, and as the blood in this case is flowing from the heart to the circumference, we must arrest it between the trunk and the wound by compressing the main artery. On the other hand, if the bleeding is from the wound or rupture of a large vein, the point for the application of the pressure will be either upon or *below* the wound. In the case of the upper arm the principal

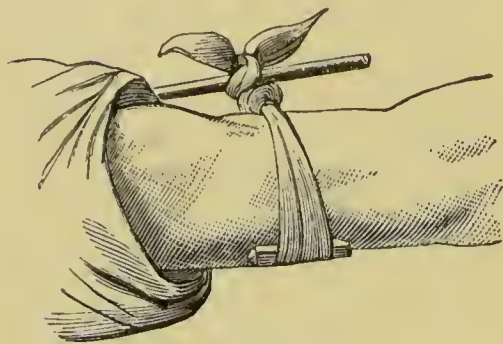


Fig. 1.

artery runs along the inner side of the limb, where it may easily be felt beating, and in the case of arterial bleeding from the hand or arm, pressure can be efficiently maintained by tying a strong tape or handkerchief round the arm, and tightening it by twisting a stick in it on the outer side of the limb, as shown in the cut, Fig. 1. In the thigh the main artery runs down the middle of the front of the limb, and can be controlled in the same way as in the arm. In both cases the introduction of

a wine cork beneath the handkerchief in the situation of the vessel will lead to more efficient pressure upon it, and without so much tightening of the bandage as would be otherwise necessary.

This mode of extemporising what is surgically called a *tourniquet* is, of course, only for temporary employment, and any case in which the bleeding has been severe enough to require its use should be seen as soon as possible by a medical man, and the bandage should on no account be interfered with before his arrival.

Before explaining the mode of applying the dressings necessary to restrain hæmorrhage of an ordinary kind, it will be advisable to say a few words about bandages. A bandage or roller is simply a strip of calico, six yards in length, and from two to three inches in width. Soft unbleached calico or coarse cambric is the best for this purpose, but on an emergency any suitable material may be employed; and for binding up fingers broad tape or narrow ribbon is very convenient. In order to use a bandage properly it must be rolled neatly and tightly from one or both ends, as seen in Fig. 2; but it is only the “single-headed roller,” or that rolled from one end, which can be required in domestic surgery. A bandage may either be rolled by keeping it tight with the thumb and fingers of the left hand,

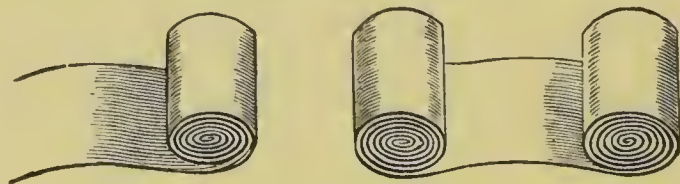


Fig. 2.

whilst being rolled with the right, as shown in Fig. 3; or this may be more conveniently and rapidly done by using both hands for rolling, whilst the bandage is kept on the stretch by an assistant, as shown in Fig. 4.

In bleeding from slight cuts about the fingers and hand, plaster (either court

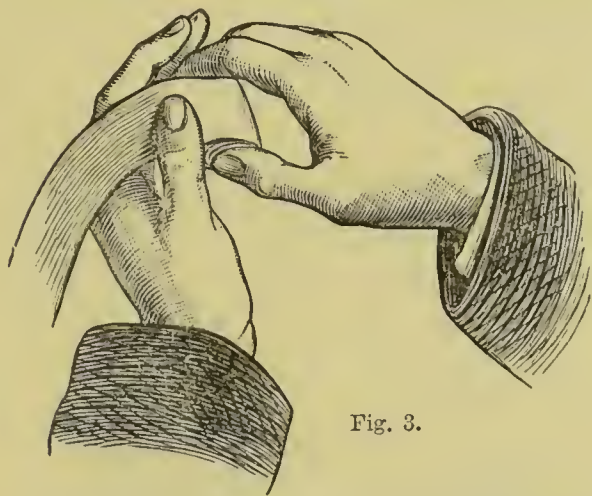


Fig. 3.

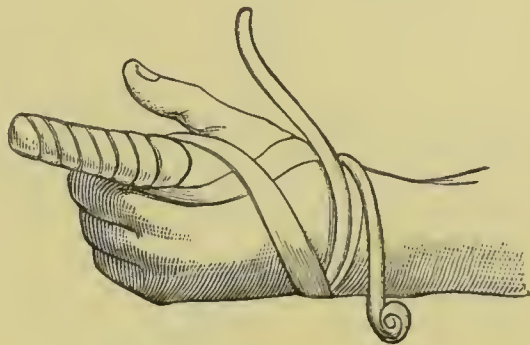


Fig. 5.

or adhesive) may be conveniently employed if a bandage is used over it at first and until the plaster has become firmly fixed; but when the wound is considerable it is better to use other means. A piece of lint or soft linen should be placed over the wound, and over this a bandage should be firmly applied, and should extend, if possible, a little above and below the seat of the injury. In the case of a finger a roll of tape may be taken, and ten or twelve inches being drawn out and left loose, the finger should be rolled in a series of spiral turns from the web to the nail, where the spiral arrangement being reversed, the tape can be carried up again and across the back of the hand, and tied round the wrist with the end left out, as in Fig. 5. If the

wound is in the ball of the thumb the bleeding is often sufficiently severe to require medical attendance, and this should be obtained, if possible; though the vulgar fear of "lock-jaw" from an injury of this kind is unfounded. When it is necessary to bind up the thumb the broad tape may be conveniently used, and, a turn having been taken round the wrist to fix the bandage, a series of figure-of-8 loops

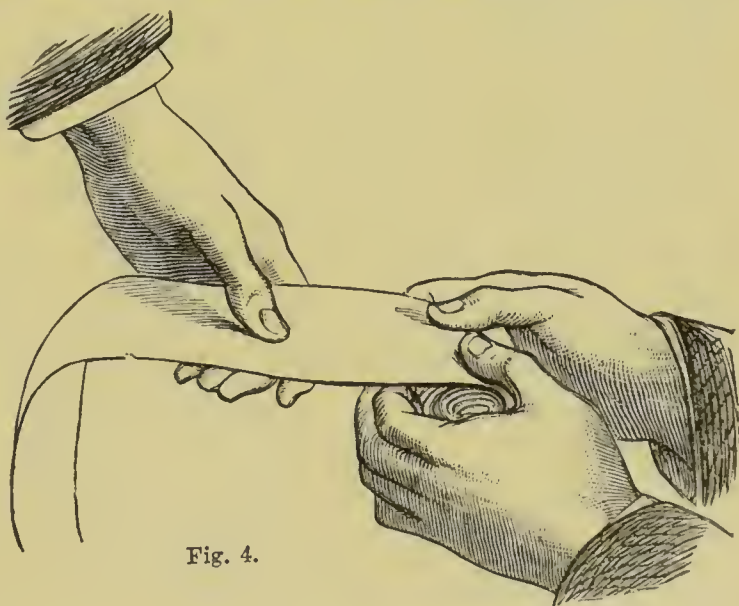


Fig. 4.

around the thumb and wrist should be made, beginning as low down on the thumb as may be necessary, and making each fold of the bandage overlap that which preceded it, as shown in the illustration, Fig. 6.

Wounds of the palm of the hand, if severe, should be immediately seen by a surgeon, but as a temporary measure a slice of cork wrapped up in a piece of linen may be firmly bound upon the bleeding point with a bandage. This should be applied in figure of eight loops around the wrist and hand, being made to cross at the point where the pressure is required, as shown in the illustration, Fig. 7, and this should be repeated a few times so as to control the bleeding. It may be advisable, where

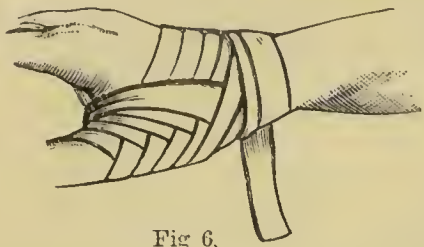


Fig. 6.

assistance is not readily obtainable, to bandage the fore-arm in addition, and this may be done by carrying the bandage once or twice round the wrist alone, and then proceeding up the arm, turning down the bandage in the manner shown in the

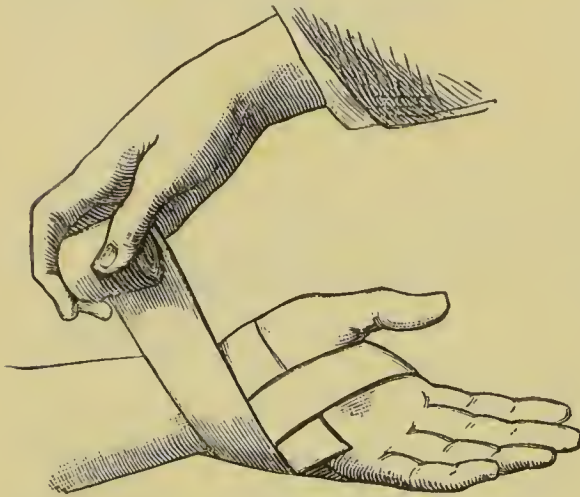


Fig. 7.

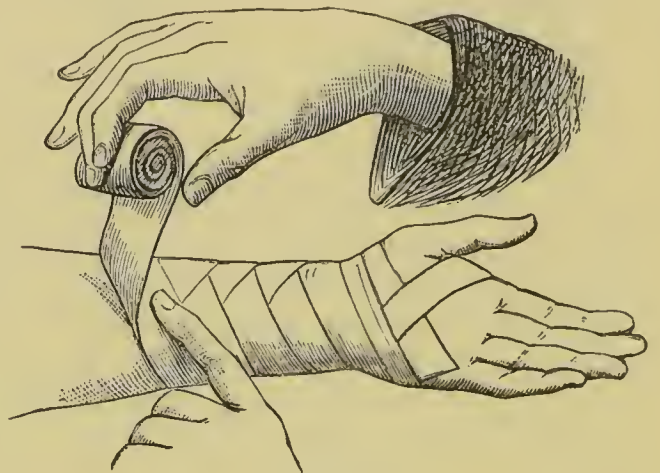


Fig. 8.

illustration, Fig. 8, when the shape of the arm does not allow it to lie flat and close upon the injured limb.

In all cases of bleeding from the hand or arm it is important that the limb should be kept quiet, and in a raised position. For this purpose, and for many others, a sling is most conveniently made of a silk handkerchief, which should be folded like a cravat, and of a convenient width. The limb being placed in the loop of the sling, the front end is to be brought forward over the opposite shoulder, and the other end over the shoulder of the same side to meet it at the back of the neck, as seen in the illustration. In this way the arm will be drawn forward, and can be easily raised to any height, and the sling will not slip as it always does if tied in the opposite way (Fig. 9).

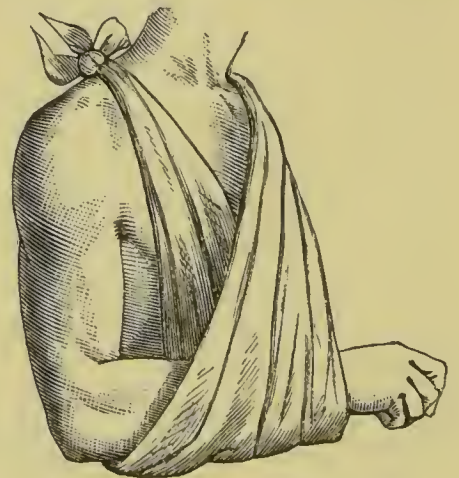


Fig. 9.

Bleeding from cuts about the face is seldom serious, unless the lip should be divided by a blow upon the mouth, in which case a surgeon should be immediately consulted, or the resulting deformity may

be great. Collodion is a very useful application to cuts about the face, and in applying it the part should be firmly pinched with the fingers for a few moments, so as to stop the bleeding, then having been wiped dry, the collodion may be painted on, and after a few minutes, when it has dried, the part may be released from the fingers. Court plaster may be applied with the same precautions, care being taken that both sides of the plaster are thoroughly wetted, without removing the adhesive material. In extensive cuts upon the face it is advisable to have recourse to stitches of silk, in order to reduce the resulting scars to a minimum. In cases when the assistance of a medical man cannot be obtained, an ordinary stout sewing needle, with purse-silk or stout cotton, may be pushed through the whole thickness of the skin on each side of the cut, and an eighth of an inch from the margin, and the silk be tied in a double knot when the loop has been drawn tight, so as to bring the edges together. One stitch will be required for a cut an inch long, and so on in proportion; and a strip of plaster should be put across the wound on each side. Stitches should not be left in the skin of the face more than two days, and should then be cut close to the knot with a sharp pair of scissors, and drawn out gently. Narrow strips of plaster applied across a wound, and slightly overlapping one another, will, in many cases, obviate the necessity for stitches.

In wounds about the head, a little of the hair on each edge of the wound should be cut away, and a pad of lint be placed over it, and be bound on firmly with a bandage. This will of course vary somewhat, according to the position of the cut, but will consist essentially of one or two turns round the front and back of the head, which should be secured with a pin, followed by a turn beneath the chin and over the top of the head, which will keep the other tight, as in the illustration (Fig. 10).

The trunk and lower limbs are seldom wounded, unless the injury is a severe one, which would necessitate immediate medical attendance. Before this arrives, the only assistance bystanders can give is to stop any bleeding, either by making pressure upon the bleeding spot, or by encircling the limb with a handkerchief tourniquet as already described.

A *burst Varicose Vein* in the leg gives rise to serious bleeding, which will be dangerous if not rapidly checked. As the accident ordinarily happens when the patient is standing, she (for it is usually women who suffer from varicose veins) should immediately lie down, and the leg should be raised, whilst a bystander presses the finger upon the bleeding point. A pad of lint and a firm bandage should then be applied, and the patient should rest the leg for a few days, and continue the use of the bandage as long as the veins are swollen.

To bandage a leg properly, the foot must be raised and the bandage secured round the ankle by crossing the ends in front of it, as represented in Fig. 12. The bandage is then carried beneath the foot, and again around the ankle once or twice, and then round the leg, each turn overlapping the preceding one. When the calf

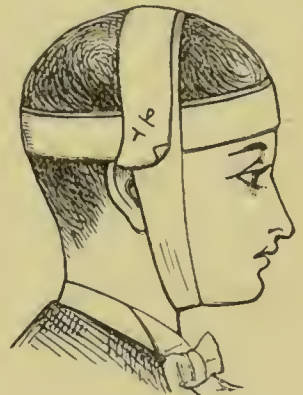


Fig. 10.

is reached, it will be necessary, in order to make the bandage fit properly, to turn it down on the outer side of the limb each time the bandage surrounds it; and in order to do this neatly, the bandage should not be drawn tight until after the "turn" has been made. It will assist in doing this neatly if the finger is laid upon

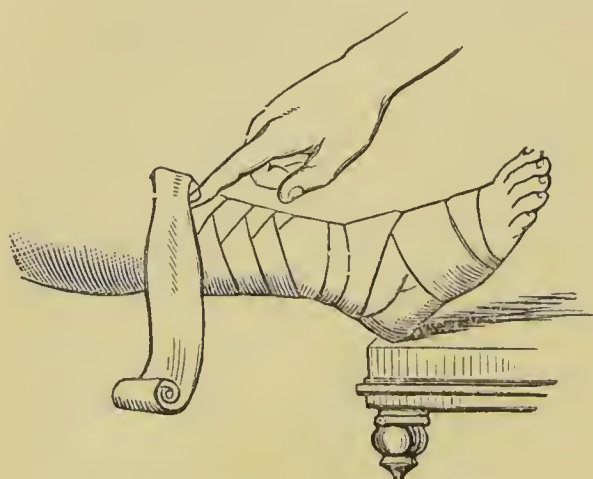


Fig. 11.

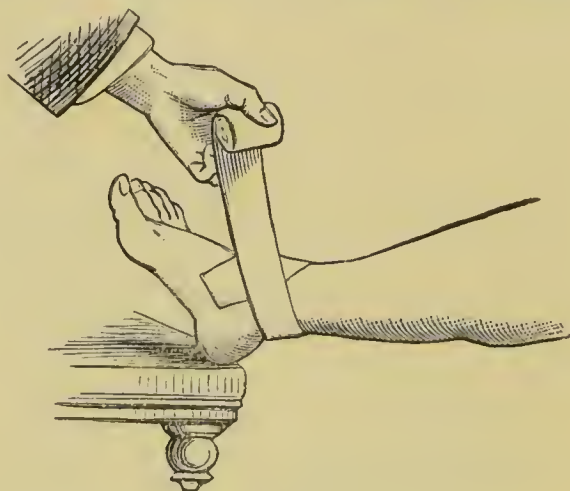


Fig. 12.

the bandage, to fix it at the point where the turn is to be made, as shown in the illustration (Fig. 11).

Bleeding Piles may depend upon plethora, and be salutary, if slight; but if severe, and much blood is habitually lost, medical advice should be sought, in order that they may be permanently relieved. To check the bleeding temporarily, the injection of cold water, or cold decoction of oak-bark, is the best remedy.

WOUNDS, BRUISES, AND SPRAINS.

Wounds.—The immediate treatment of ordinary wounds of a slight character has been sufficiently indicated in the sections relating to hæmorrhage. The after-treatment of a wound cannot be of too simple a character. Where there is no pain or discomfort about the wounded part, there can be no object in disturbing the first dressing applied, and this should be left undisturbed for from two to four days, according to the severity of the injury. If all has gone well, it is quite possible that a skin wound may heal at once, and merely require the application of a piece of plaster over it, to protect it for a few additional days. If, however, it is found on carefully soaking off the original dressing that the wound is open and discharging, the best application will be the "water-dressing." This consists simply of a double fold of lint or soft linen suited to the size of the wound, and wetted with warm water, over which a piece of oiled silk, slightly larger than the lint itself, is secured with a strap of adhesive plaster or a bandage. The lint should be changed twice a day, but the oiled silk will serve for many days in succession. If a simple wound fails to heal in a few days under this treatment, medical advice should be had recourse to. If on removing the first dressing a wound is found to have its edges red and tender, and the part is painful, a poultice of bread or linseed meal may be applied for a day or two before the water-dressing is begun. The vulgar dread of what is termed "proud flesh" may be mentioned here, simply for the purpose of

stating that the so-called proud flesh is only a slight exaggeration of the ordinary process of healing, and is of no moment unless it rises high above the general surface, in which case the occasional application of a piece of blue vitriol (sulphate of copper) will soon reduce it to proper dimensions.

Poisoned Wounds.—The form of poisoned wound most familiar in domestic surgery is in the finger of a cook who has pricked herself whilst trussing game or cleaning fish. The slight prick, which is not noticed at the moment, becomes painful in the course of a few hours, when the finger becomes hot and swollen, and a red blush is seen to be extending up the finger to the hand. This state of things, if taken in time, may be effectually checked by the application of a wetted stick of lunar caustic over all the inflamed surface, and for some little distance beyond it. The caustic, of course, causes a smarting pain, and turns the finger black, but this wears off in a few days. A solution of caustic answers as well, or even better, than the solid caustic in these cases, and the ordinary “nitrate-bath” of photography, to be found in so many houses, is very good for the purpose. Instead of the inflammation spreading in the above described way, it may be concentrated in the wounded spot and give rise to a whitlow. In this case, fomentation of the whole hand, hot linseed-meal poultices, and support in a sling, will be the proper treatment; but if matter forms, it will probably require an incision, in order to save the finger, and therefore early recourse should be had to a surgeon. Bites of animals may give rise to poisoned wounds, without there being any risk of hydrophobia; and this is seen in the case of pet dogs, cats, squirrels, &c. The same treatment as for ordinary wounds, followed by that indicated for poisoned wounds, if occasion arises, would be proper in such cases. When there is the least reason to fear hydrophobia in the animal which has bitten, every precaution should be taken, which should include thorough canterisation or extirpation of the wounded part; but this it is impossible for a non-medical person to carry out effectually. The bite of the adder is the only example of snake-poison met with in this country, and its effects, though serious, are not ordinarily fatal. In order to prevent, as far as possible, absorption of the poisonous material into the system, a string should be tied tightly above the wounded spot, which should be well sucked, the operator taking care to rinse his mouth out with a little brandy-and-water, and not to swallow any of the poison. After this, hot fomentations and a poultice will be the proper treatment. If the poison has spread up the limb it gives rise to great swelling of the part, and this may even extend to the trunk. Friction with warm oil is the best remedy for this state of things, but it often does not subside for some days. The stings of wasps or bees are painful, but not dangerous, unless some vital part, such as the inside of the throat, is stung. The stings, which are often left in the part, should be extracted with fine forceps or tweezers, and the smarting pain may be allayed by a little moistened carbonate of soda being laid over, or some sal volatile and oil rubbed on the part.

Penetrating Wounds of a slight character arise from the incautions use of some common articles of domestic use, such as an ordinary sewing-needle, a crochet-needle, or a fish-hook. The ordinary needle, if buried beneath the skin of the hand or other part, may be readily extracted if so placed that both ends can be felt. In that case it is only necessary to press the end nearest the surface through the skin,

and it can be easily withdrawn. If, however, as more frequently happens, only one end can be felt, and it is uncertain what length of steel is in the tissues, attempts to force the needle out lead generally to its being buried deeper; and it is better, therefore, to have recourse to medical advice at once, in order that the surgeon may, if he think it advisable, at once cut down upon the foreign body. Operations of this kind, though apparently trivial, should never be undertaken by amateurs, since the hand is too important an organ to be cut into lightly by one unacquainted with its anatomy; and, besides, there is usually no great urgency in the case, and the needle may very well be left alone until, in process of time, it makes its way to the surface, as it is pretty sure to do. Crochet-needles are more difficult to manage than ordinary needles, owing to the hook at one end. If merely driven accidentally into the skin, the wound may be cautiously enlarged with a lancet or sharp and clean penknife, so as to allow of the withdrawal of the barb; but if deeply embedded in a finger, or, as has happened, in the tongue of a child, it will be necessary to push the point through in order to cut the hook off with a pair of wire-pliers, and for this medical assistance should, if possible, be obtained. Fish-hooks are to be treated on a similar plan, except that the disciple of Walton, being generally alone and at a distance from all surgical aid when the accident happens, must be content to cut the line from the mischievous hook, and having forced the barb through the nearest point of skin, should withdraw the hook through the wound thus made.

Bleeders are persons who suffer from what is scientifically called a "hæmorrhagic diathesis"—i.e., they bleed profusely from the slightest scratch, and the blood is so peculiar that there is the greatest difficulty in stopping its flow. This disease is, fortunately, of not very common occurrence, and is only mentioned here in order to warn parents of children who suffer from a tendency to bleed, that they should always inform their medical man and their dentist of the fact, so that, as far as possible, all sources of bleeding may be avoided; and should hæmorrhage accidentally occur, immediate medical assistance should be obtained, since every hour's delay renders it more difficult to stop the bleeding.

Bleeding from the Nose is sometimes violent, and usually an evidence of some derangement of the general health, for which medical advice should be sought. In order to check the bleeding, cold water may be employed to bathe the face and head; or ice water may be injected with a syringe or india-rubber bottle into one nostril, when, if the patient will lean forward and keep the mouth open, the water will flow round the back of the nose and out of the opposite nostril. In slight cases, merely sniffing up cold air forcibly will often check the bleeding, and, in addition, powdered alum or tannin may be used as snuff. When the bleeding continues for any time, the surgeon should be called in to plug the nostrils.

Bruises and Contusions are common accidents where there are children, and fortunately a child is able to sustain, without serious after-consequences, a bruise which might be of importance to an older person. The application of cold has a tendency to check the swelling and sub-cutaneous extravasation of blood constituting a bruise, and this may be applied in any form most convenient—cold vinegar-and-water, iced water, or the favourite cold metal spoon. Raw beef-steak is popularly supposed to have a great controlling effect upon bruises, but apparently without

good foundation. There is a medical remedy of recognised utility in these cases, however, namely, the tincture of arnica; and this may be painted on the skin, if not broken, or applied diluted with water, if the skin is torn. There is, however, one caution to be observed in the use of arnica—that in some persons it excites an irritation of the skin closely resembling erysipelas, particularly if applied to a broken surface. Some caution should, therefore, be used in its first application, though the frequency of the occurrence of any untoward result is probably very greatly exaggerated. Contusions are more severe accidents than mere superficial bruises (with which, however, they may be combined), since they may endanger the life of the sufferer from injury to deep-seated and important organs. The immediate effect of a severe contusion of any part is ordinarily to produce faintness and nausea, and for this the patient should be laid in an horizontal position, should be allowed plenty of fresh air (and consequently should not be crowded upon by bystanders), and may, if able to swallow, drink a *small* quantity of weak brandy-and-water or wine. On recovering from the first faintness, no other symptoms may appear, and the patient may have received no further injury than the “shock” of the accident; but if, from the nature and severity of the injury itself, it may be suspected that some internal injury has been received—as shown by faintness, by hiccup, or pain in the abdomen or chest—recourse should be had to medical aid.

Concussion of the Brain is the common result of a contusion of the head, and cannot be too seriously regarded. In *any* case of injury to the head, where insensibility has occurred, a doctor should be sent for, but even in slighter cases, when the concussion has apparently only produced a temporary dizziness, careful treatment, both at the time and after the injury, will be necessary to restore the patient to a healthy state of both mind and body. In any case of insensibility from injury to the head, no harm can be done by cutting the hair close, and applying cold water to the head until the surgeon's arrival; or should this be delayed, and the patient's body be cold and the skin clammy, hot bottles may be put to the feet in addition. Beyond this, however, it is never safe for a non-professional person to go, in a case of severe injury to the head; and most particularly ought the administration of stimulants in any form to be avoided. Cases of head-injury are often more grave in their after-consequences than in their immediate symptoms, and it is sometimes difficult to persuade the friends of a patient who is apparently well, of the necessity for rest and quiet for some weeks after the accident. Irritability of temper and inability to bear slight noises are often but symptoms of irritation of the brain, and should be at once reported to the medical adviser.

Sprains.—A severely sprained ankle is a common, and at the same time a serious accident. As it is very possible that the accidental twisting of the foot to one side may have broken the small bone of the leg near the ankle, such a case should always be seen as soon as possible by a medical man. But if the sprain is of a sufficiently slight character to be treated domestically, it should be borne in mind that complications may occur at a later period, for which medical advice should not be too long delayed. In the case of a sprained ankle, it is of the first importance to get the boot off before the swelling, which invariably follows, has come on. If the accident has happened at a distance from home, the foot should then be firmly bound up with

a bandage applied round the ankle in a series of figure-of-8 loops, and the foot kept in an elevated posture during the conveyance of the patient to his house. On reaching home, the bandage is to be removed, and the foot assiduously fomented with water

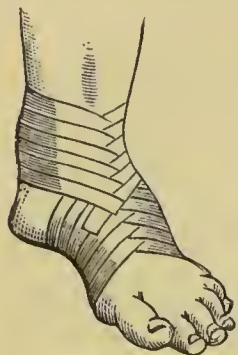


Fig. 13.

as hot as can be borne, until the pain is relieved, some tincture of arnica or poppy-heads being useful adjuncts to the fomentation. The application of leeches to bad sprains is often of service, but it is not safe to have recourse to them without medical sanction. The use of cold applications to sprains, though popular, is not to be recommended. The cold lowers the vitality of the part, and tends to prevent the very repair which it is our object to bring about. Support and rest are the points to be insisted on, and these are most readily obtained by strapping the joint firmly with adhesive plaster, so that no movement of the ankle is possible. In order to do this, it is necessary to have a yard or two of good "strapping"

or "soap plaster," so that the pieces required may be cut "in the length" of the calico. Strips long enough to encircle the foot and cross by some inches, are to be cut, and must be thoroughly warmed, one by one, either by holding them with the plain side to the fire, or, better, by plunging them for a moment into a basin of hot water. The foot being then brought to a right angle with the leg, and supported on the heel at a convenient height, the strips of plaster are to be applied as follows:—Beginning near the roots of the toes, the first strip is to be passed beneath the sole, and the ends crossed over the instep, and each strap is to be placed nearer the heel, and to overlap its predecessor for about half its width. When half a dozen straps have thus been applied, another series is to be made to pass around the upper part of the joint horizontally, crossing the first set on the instep, and thus the whole joint will be supported and compressed, and the patient will be able to get about (Fig. 13). A bandage should be applied over the plaster, to keep it from slipping. In a couple of days the plaster will have become loose, owing to the subsidence of the swelling, and must be renewed, the old plaster being most easily removed by slipping the blunt end of a pair of scissors beneath it on one side of the foot, and dividing it so that it can be taken away in one piece. For a sprain of moderate severity the plaster will require renewing three or four times; but even when its use is abandoned, it will be advisable to employ a bandage or an elastic "foot-piece" for some time, as the foot will still require support. A sprain of one of the larger joints, and especially of the knee, is a serious injury; and if any severe symptoms show themselves, immediate recourse must be had to

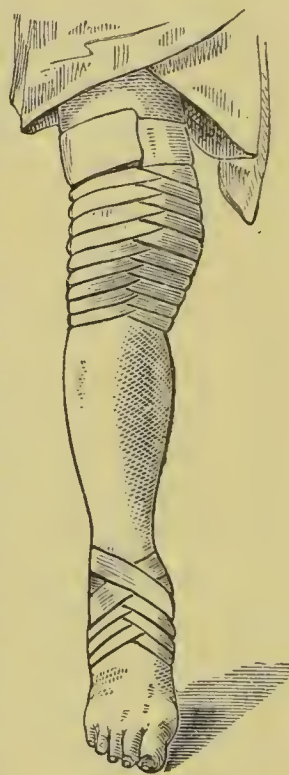


Fig. 14.

medical aid. When a knee merely gives way occasionally under a person when walking, and there is no swelling or heat about the part, it will often be of service to support the joint with a knee-cap, which may be of elastic material, and is better made to lace up than to draw over the leg. When the joint continues weak for

some time, it may be advantageously treated like an ankle by strapping, the plaster being cut long enough to go once and a half round the joint, and about an inch in width. The straps are then made to overlap in regular series, from below upwards, crossing in front until the joint is completely covered, as seen in the illustration (Fig. 14).

A *Strain* is much the same as a sprain, except that it does not necessarily occur in the neighbourhood of a joint. It consists in the tearing of some tendinous or muscular fibres, and is generally the result of some violent and unwonted exertion. The treatment consists in obtaining rest and support for the part by careful bandaging, the use of a sling, &c. The term "a strain" is sometimes applied by the lower classes to the occurrence of a rupture or escape of a piece of bowel from the cavity of the belly. If any swelling should be noticed in the neighbourhood of the groin after some exertion or athletic exercise, a surgeon should be immediately consulted, as the case may be a serious one, and delay be a matter of life or death.

FRACTURES, DISLOCATIONS, BURNS, AND SCALDS.

Fractures.—The treatment of broken bones is much too important to be entrusted to any but professional hands, but there are some points connected with the early care of such cases which may be advantageously insisted on. The great majority of fractures are what is technically called "simple," *i.e.*, there is no wound of the skin communicating with the broken bone; the more serious cases, where there is a wound, and possibly laceration of the soft tissues of the limb, are termed "compound;" and when the bone is broken into several pieces, the fracture is said to be "comminuted." In all cases of fracture it is most important to avoid all rough manipulation of the limb, lest the "simple" fracture should become "compound," by the end of the broken bone being thrust through the skin; and as the muscles of the limb itself, if excited to action, have a direct tendency to produce this undesirable result, the patient should not only abstain from all voluntary effort, but means should be taken to restrain all involuntary contraction of the muscles of the limb, as will be afterwards explained.

The immediate effect of a severe injury likely to produce a fracture is ordinarily a certain amount of faintness, and this need give no alarm if the patient is not losing blood at the same time. The only treatment required will be fresh air, with perhaps a little cold water sprinkled on the face, the head being kept low until the faintness has passed off, when a little brandy may be given if the patient continues exhausted.

Since severe accidents usually happen in the open air, the next requisite will be to place the patient under shelter; and the method of conveying an injured person safely for some distance is a matter of no small moment.

In the case of a broken arm the sufferer will naturally support the injured limb with the opposite hand in the position least painful to himself. When this has been ascertained, and if there is any distance to travel before a surgeon can be seen, the arm should be supported both by handkerchiefs arranged so as to sling it, and also by a handkerchief or bandage bound—not too tightly—round the arm itself, so as to support the parts. A piece of cardboard (such as is used for tying up gloves), or a piece of common hat-box four inches wide, may be advantageously placed on each

side of the broken bone and secured with the bandage which envelops it. The patient may then be safely driven some miles in a carriage; and a four-wheeled conveyance with good springs is to be preferred.

If one of the bones of the leg is broken the patient is immediately rendered helpless, and the greatest care will be requisite, lest in moving him great pain should be inflicted.

By far the most satisfactory way to carry a wounded man is on some form of litter borne by four bearers. A hurdle, or a small door taken off its hinges, is a very good substitute for a regular "stretcher," and either, with a mattress and pillow, will form a very comfortable temporary means of transport. When neither of these is at hand, a blanket may be used to carry a patient in for a short distance, or if four poles can be procured and fastened together to form a framework the blanket can be tied to the corners, as shown in the illustration, Fig. 15, and will then be



Fig. 15.

much more efficient and easy to carry. Whatever method is adopted there are certain rules with regard to carrying a stretcher which should be carefully attended to:—A stretcher should be carried by four men rather

than by two, and should always be carried by the hands and not on the shoulders; the drawbacks to the latter proceeding are the difficulty of finding on an emergency four men of the same height, so that a level position may be secured; and also that any tilting of the stretcher may throw the patient off from such a height as seriously to aggravate his injury. Besides, the raising and lowering of the burden is not an easy matter, and is apt to frighten the patient when unskilfully performed.

It is *not* advisable that the bearers of a stretcher should "keep step." If only two men are carrying a stretcher, and they march "in step" the load they are carrying will be swayed to the right and left side alternately, to the great discomfort of the patient; but if one advances his right foot and the other his left, the burden will be kept perfectly even. The same rule applies to the case of four bearers, only here the front and rear men of *opposite* sides should keep step, and be out of step with their companions.

A temporary splint may be advantageously applied to a broken leg before the patient is moved on to the litter, as has already been advised in the case of a broken arm, and for this purpose nothing answers better than a couple of sticks or umbrellas, or some clean wheaten straw laid along each side of the broken limb, and bound to it by two or three handkerchiefs.

In the case of a badly-sprained ankle, or a crushed foot, it will be sometimes convenient to carry a patient between two bearers in a sitting position, or semi-recumbent. The first method is shown in the accompanying illustration, Fig. 16, the opposite hands of the bearers being interlaced under the thighs and behind the loins, and the patient putting his arms round the bearers' necks. This method is very trying to the bearers, and could only be endured for a short distance. A

patient is much more easily carried in the semi-recumbent position, if placed in the arms of two men, arranged as shown in the illustration, Fig. 17, their opposite hands firmly interlacing in front, and their other hands being placed on each other's shoulders, so as to support the patient behind; thus the weight of the patient falls chiefly on the two arms behind him, and he can be carried for some distance without fatigue.

Another way of carrying a patient is upon what is known among schoolboys as a "sedan-chair," each bearer grasping his own fore-arm and that of his fellow about



Fig. 16.

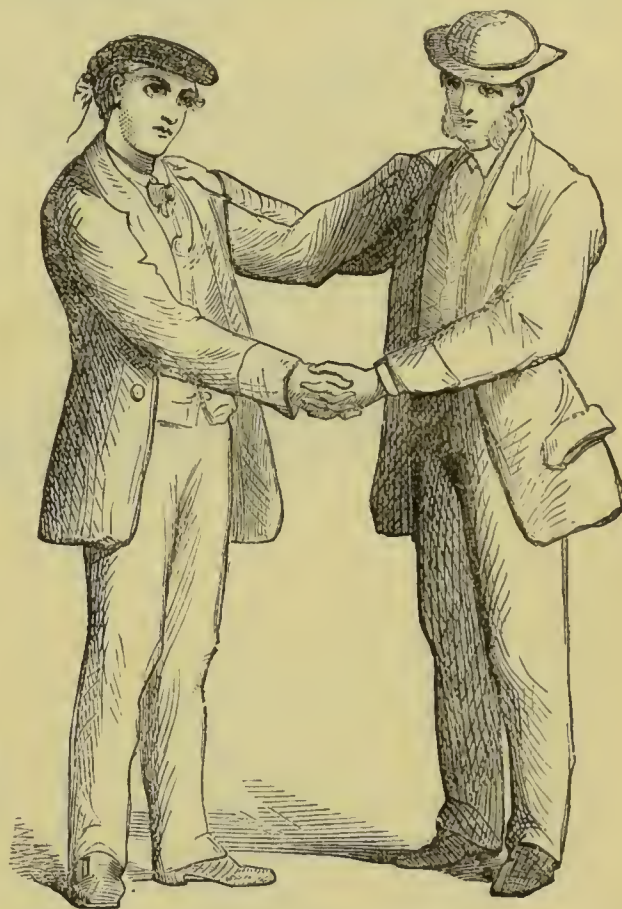


Fig. 17.

its middle, as shown in the illustration, Fig. 18, and the patient grasping the bearers' necks, as shown before in Fig. 16. This is a convenient way to carry ladies over shallow streams, &c., in the course of country walks or at picnics; and as on those occasions sprained ankles are not altogether unknown, a disabled member of a party may thus be transported for a long distance with relays of bearers, the two working together being as nearly as possible of a height.

Dislocations.—A dislocation, like a fracture, should always be submitted to the care of a surgeon as soon as possible. When a bone has slipped from its socket the limb is useless, and there is more or less pain, and the neighbourhood of the joint is deformed.

A dislocation of the shoulder is at once the most common, the most painful, and the most readily reduced of these accidents, and we venture, therefore, to give a few

hints for its treatment. A fall into a ditch is a common cause of this accident, the elbow being caught on the bank and suddenly thrust upwards, when the head of the

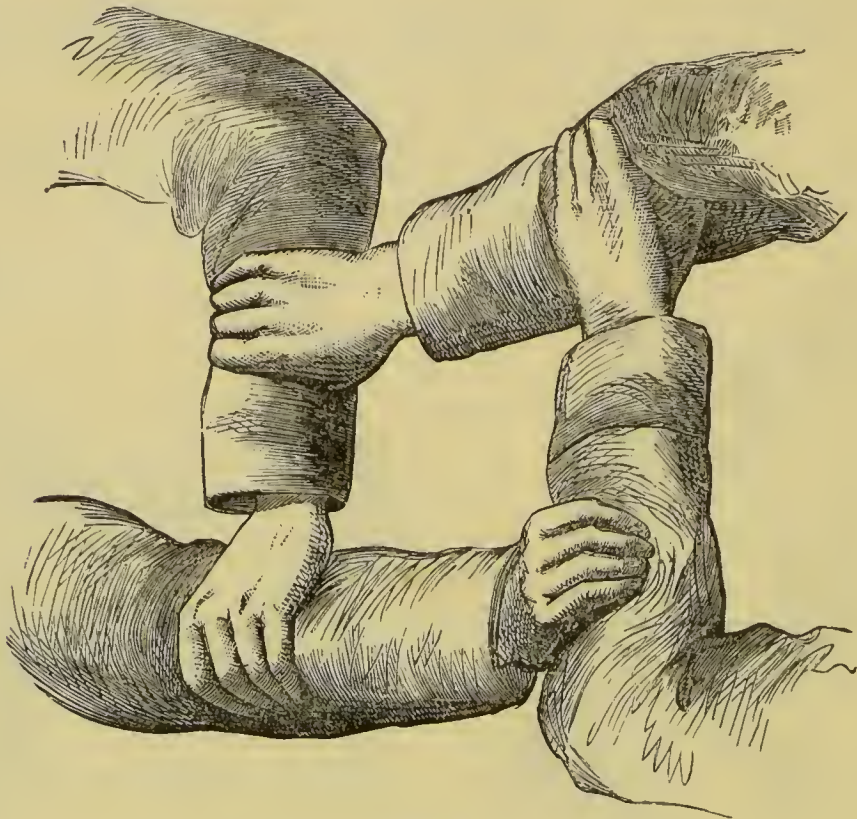


Fig. 18.

bone slips out of its socket and into the arm-pit, giving rise to excruciating pain from its pressure upon the large nerves. This being an accident which may happen to a rider when hunting, or when unable to obtain assistance, he may safely make an attempt to reduce the arm himself, by using a gate for the purpose of a fulcrum, as shown in Fig. 19. Here, lifting his arm over the gate, the patient grasps with the hand of the affected side the lowest bar he can reach, and allows the weight of his

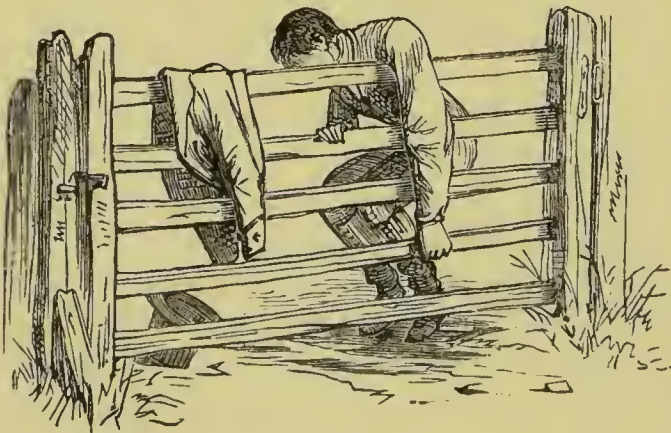
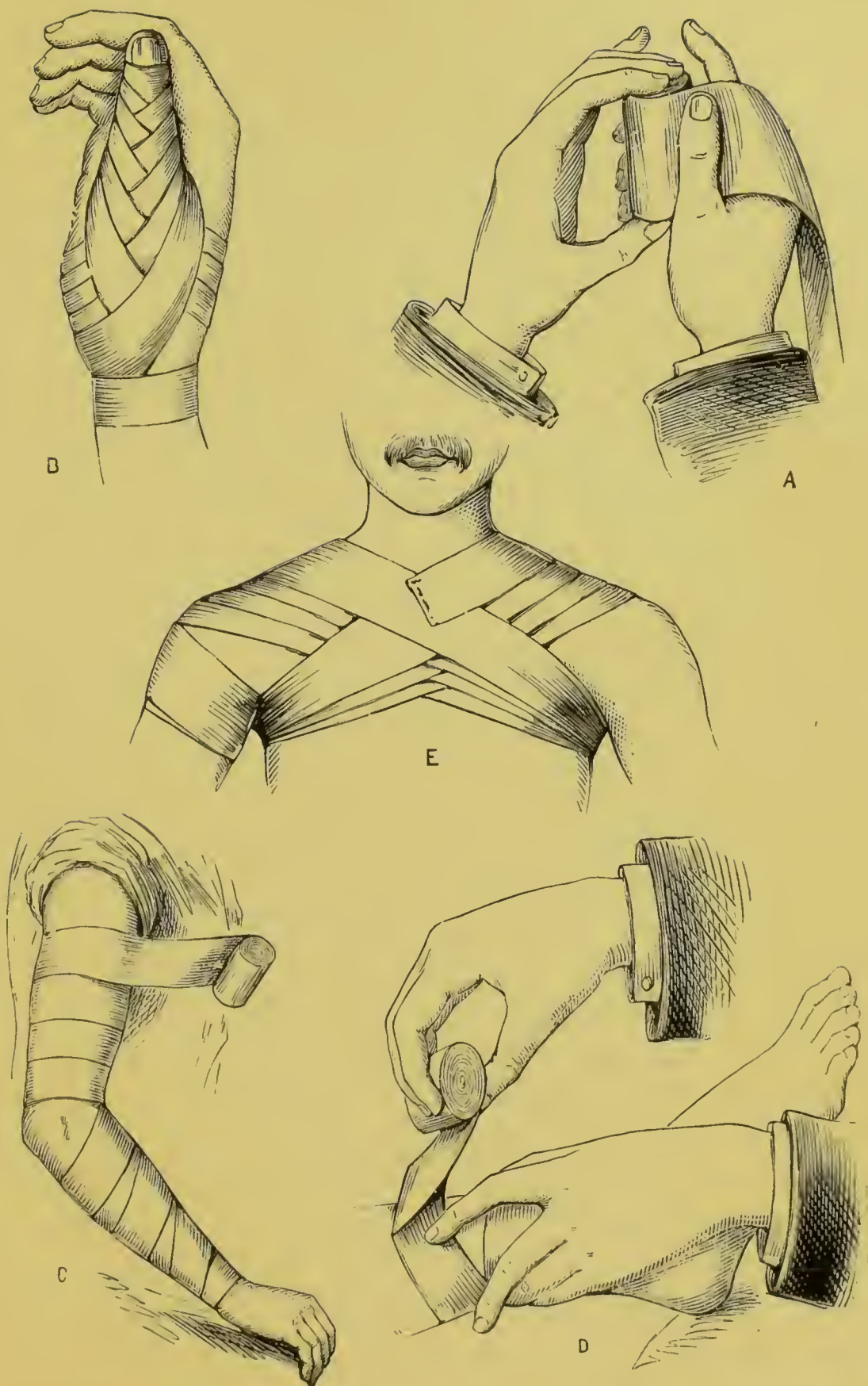


Fig. 19.

body to hang on the other side of the gate until, by the pressure of the top bar, the bone is forced into its socket with a snap.

Another method, which may be safely employed by a bystander, is to seat the sufferer in a strong chair, and to put the foot on the seat with the bent knee under the dislocated shoulder, as shown in Fig. 20. The arm is then to be grasped and forcibly bent over the knee, when the dislocation will probably be reduced ;

no more violent efforts are justifiable in the hands of non-professional persons, and in any case, even of *reduced* dislocation, the patient should be seen by a



DIAGRAMS OF VARIOUS BANDAGES.

A. Mode of rolling bandages.

B. Spica bandage of the thumb.

C. Circular bandage.

D. Reverse bandage.

E. Figure of Eight bandage of the chest.

surgeon as soon as it is convenient, lest any other injury which he may have sustained at the same time should have been overlooked.

Burns and Scalds.—Burns are probably not quite so frequent as scalds, but are much more alarming at the time of their occurrence, and, if severe, are much more serious in their results than scalds. The slightest form of burn, viz., a superficial burn or scorch, merely reddening without destroying the skin, may be produced by a slight explosion of gas, or the ignition of some article of clothing which has been rapidly extinguished. Here the pain is severe for the moment, but rapidly subsides as soon as the burnt surface is protected. This can be readily effected by dredging flour over the part, and wrapping it up in cotton wadding; or, should the part burnt be one not readily covered in this way, *e.g.*, the face, by painting it over with a mixture of equal parts of collodion and castor oil, or with a solution of nitrate of silver, such as the nitrate-bath of photography. When the burn is more severe, little blisters rapidly form on the burnt part, and these *vesicles*, as they are surgically termed, require careful treatment. If, as is sometimes recommended, these vesicles are left to themselves, the contents solidify and a jelly-like mass is left, which has afterwards to be got rid of by poulticing, to the great discomfort of the patient; or, even if this coagulation does not take place, the thin scarf-skin, or cuticle, raised by the blister is apt to be torn away and leave a tender surface beneath. The best plan, therefore, is at once to prick the blisters on one side with a needle, or to make a small opening with a sharp pair of scissors, and then carefully to squeeze out the watery contents, pressing down the skin gently but firmly with a piece of cotton-wool. When this has been done the case may be treated by any of the methods already given for slight burns, but it must be borne in mind that fresh vesicles may form after the first dressing, and hence great care must be taken, in the subsequent dressings, not to tear open the blisters unintentionally. Scalds closely resemble slight burns in both their symptoms and treatment, and need not, therefore, be treated of at greater length. Severe burns, such as arise from the clothes taking fire—crinoline accidents, as they used to be called—are very serious, both as regards the life of the patient, and her future comfort, should she survive; and medical attendance should be immediately obtained. Lacking this, however, it may be noted that the *immediate* danger to the sufferer's life is due to the violent "shock" which the system sustains, as is shown by the faint, semi-conscious, and pallid condition in which the patient is left when the conflagration is extinguished. The proper treatment will be to restore warmth and vitality to the sufferer, and this can be best done

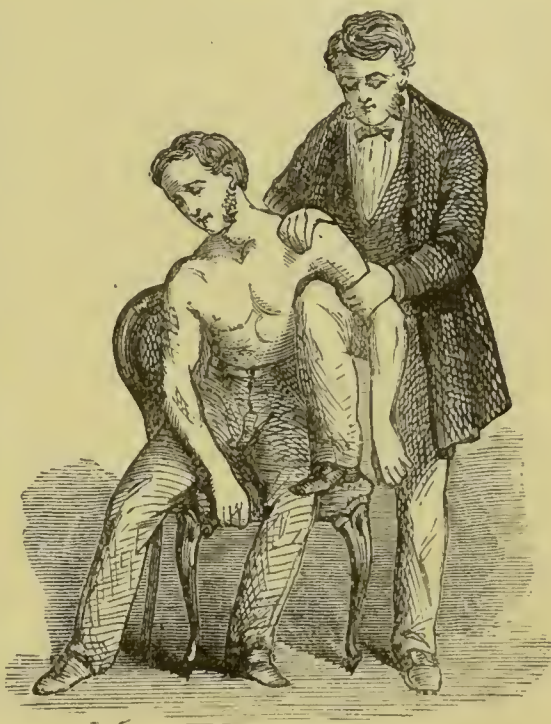


Fig. 20.

by wrapping her in a blanket, and placing her in bed (or before a fire, if it is winter), with hot bottles or bricks so arranged about the legs and trunk as to impart warmth without interfering with the burnt surface. In the case of a child (and of an adult too, if conveniences are at hand), a warm bath is at once the most soothing and appropriate treatment, since the warm water (the temperature of which must be carefully maintained at 90°) soaks off all the charred clothing, &c., and leaves the burns in the most healthy condition for dressing. At Vienna, baths are so contrived that patients suffering from burns, or obstinate skin diseases, can spend days or even weeks in them; and anywhere, with care and attention, the temperature of a bath should be kept up for some hours at least. In addition to external warmth, a severely-burnt patient will bear the administration of some hot cordial drink, and then, pending the arrival of a medical man, no harm can possibly be done by enveloping the burnt parts with cotton wadding.

Burns are dangerous, not merely from their immediate effects, but from the complications which are apt to follow in their train. Thus, in children especially, inflammation of the lungs is very apt to follow a burn about the trunk; and again, ulceration of the bowel is found to be a frequent cause of death in these cases. The friends of a patient who has been burnt should, therefore, be careful to call the attention of the medical man in attendance to any cough or difficulty of breathing on the one hand, or to the occurrence of any diarrhoea on the other.

With the best care, burns are, undoubtedly, very fatal accidents, and as prevention is better than cure, it may not be out of place to urge the necessity for wire fire-guards over *all* fire-places to which children or females have access. Men, from the nature of their clothing, are much less liable to burns than women, unless, indeed, they indulge in the pernicious practice of "reading in bed" by candle-light. Even when the first dangers of a severe burn are surmounted, the patient will have much to undergo in the healing of the wound, and here a fresh danger comes in—that of the contraction of the tissues in healing, so as to leave great deformity behind. Patients and their friends are sometimes more to blame than their attendant for terrible contractions of the neck, arms, &c., frequently seen after burns; and they do not carry out fully the surgeon's instructions, from not understanding their importance, and, being intent only upon healing-up the wound, cannot understand the necessity for care and attention. It may be laid down as an axiom that the quicker a wound heals, the more it contracts, and it is evident, therefore, that the slower a wound can be made to heal, the less likely it is to leave unsightly contractions behind. In order to prevent contractions, it is often necessary to confine the patient to an irksome position, so as, *e.g.*, to stretch the neck, or to apply a splint to keep out the arm; and these inconveniences should be cheerfully borne, when they are ordered by a competent medical man.

It may not be inappropriate here to give a few hints as to the best method of extinguishing the flames when a woman's or child's dress has unfortunately caught fire. If the sufferer has presence of mind enough to throw herself on the ground and roll over and over until the bystanders can envelop her with some thick and non-inflammable covering, her chances of escape from serious injury will be much increased; but, unfortunately, the terror of the moment ordinarily overcomes every

other feeling, and the sufferer rushes into the open air—the very worst thing she can do. The first thing for a bystander to do is to provide himself with some non-inflammable article with which to envelop the patient, and a coat or cloak—or, better, a table-cloth or drugget—will answer the purpose. Throwing this around the sufferer, he should, if possible, lay her on the ground and then rapidly cover over and beat out all the fire, keeping on the covering until every spark is extinguished. To attempt to extinguish fire by water is useless, unless the whole body of flame can be put out at one blow; and for one lightly-clad female to attempt to succour another, when other persons are at hand, is simply to imperil two lives instead of one. In the case of a house on fire, it is to be remembered that death is more frequently the result of suffocation from smoke than from contact with flame, and every effort should be made to reach the open air by crawling along the floor (where there is usually breathing space) so as to reach a window, or, if necessary, by enveloping the head in a thick shawl to exclude the smoke while making a rush along a passage or down a staircase.

SUSPENDED ANIMATION.

Under the head of suspended animation are included all those cases of apparent death in which, by the judicious application of appropriate remedies, the patient may be restored to vitality and health. The simplest form of suspended animation is that seen in *fainting*, when, from the effects of heat or over-exertion (combined possibly with tight lacing), a young lady becomes pale, falls down insensible, and appears scarcely to breathe. The admission of fresh air is of the first importance, and she should be immediately placed near an open window, and in the recumbent position, so that the flow of blood to the head may be accelerated. At the same time any tightness of dress should be at once remedied, and a little cold water sprinkled in the face. The use of smelling-salts is occasionally of service in rousing a patient, but care must be taken not to apply them too vigorously, for fear of irritating the nose. If, as sometimes happens, a fainting-fit is only the prelude to a fit of hysterics, the patient should be thoroughly roused by the free application of cold water, so soon as the hysterical sobbings begin to show themselves, and a brisk walk up and down the room, between two not too sympathising friends, will then probably avert a domestic catastrophe which is always annoying to all concerned. Persons with a feeble circulation, and, therefore, more liable to faintness, may be glad to know that they can often avert a fainting-fit when they feel it coming on, by at once lying down flat on a sofa; or, if from position—as in church—this is impossible, then bowing the head well down on the knees will have the same effect.

Drowning is the most common cause of serious suspended animation, and, as accidents may happen at any moment, every well-educated person should know what to do on the emergency. In cases of drowning, every moment is of importance, and the attempts at resuscitation should, therefore, be begun as soon as the sufferer is drawn from the water, and without conveying him any long distance to a house. The great object of treatment is to rouse the heart by inducing respiration, as in the case of fainting, and if all efforts at this have ceased, recourse must be had at once to “artificial respiration,” by the following method, known as “Sylvester’s.” The

mouth being cleared of any dirt or saliva which may be in it, the tongue should be drawn forward, and held with the finger and thumb, or secured with a piece of ribbon, or an elastic band passed over the tongue and under the chin. This drawing

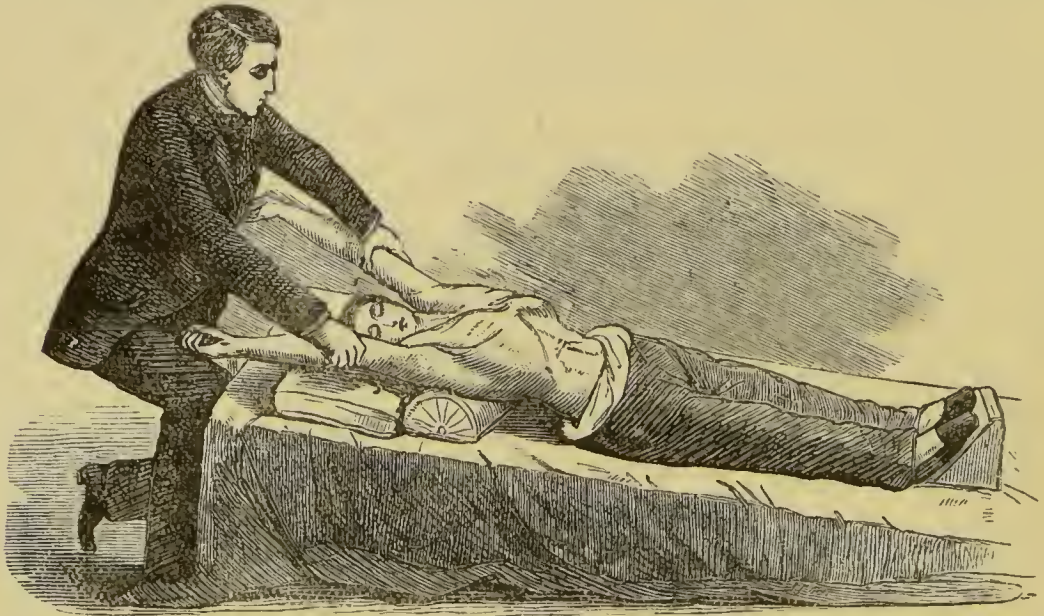


Fig. 21.

forward of the tongue is very important, as it opens the wind-pipe, and must never be omitted. The patient being then laid on his back, with the shoulders and head slightly raised, the operator kneels behind his head, grasps the arms just above the elbows, and draws them steadily and gently upwards (as shown in Fig. 21) until

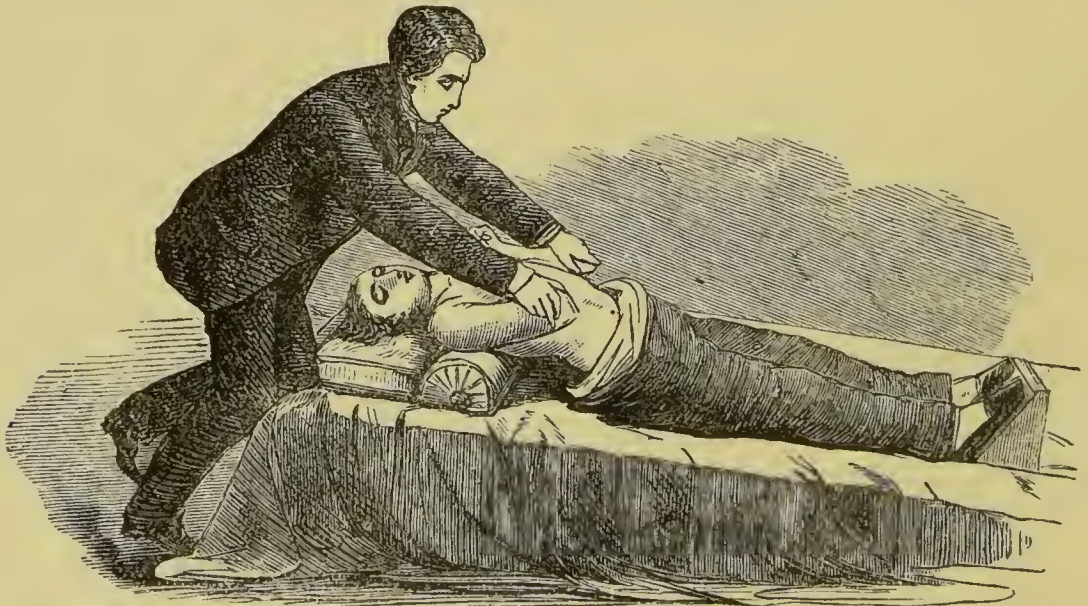


Fig. 22.

they meet above the head. By this means the walls of the chest are expanded, and air is drawn into the lungs, and a second or two should be allowed for this to take place. The operator should then lower the patient's arms to his side, and press them against his chest (as seen in Fig. 22), so as to force out the air from the lungs, and thus imitate respiration. This series of movements should be repeated twenty

times a minute—not more—and the time should be taken from the watch of a bystander, or it will be found in practice that anxiety will lead to hurry and consequent damage. As it will be impossible for one person to keep up the exertion necessary for many minutes, from the fatigue consequent upon it, he should be relieved as often as may be necessary by another, who should have watched and learnt the method of proceeding; but it is important that all directions should be given by one person, since confusion and delay are sure otherwise to occur. Whilst efforts at restoring respiration are being thus unceasingly carried out, the attention of other assistants should be given to restoring the warmth of the body of the drowned person, by removing wet clothes, applying hot blankets and bottles, and by using friction assiduously to the limbs, in an upward direction, so as to favour the flow of blood towards the heart. The utility of a warm bath is questioned by many authorities, and should only be resorted to when the patient is suffering from extreme cold. Even in this case, it is well to dash cold water over the face and chest, so as to excite respiration, and the use of the warm bath should not be continued more than five minutes, without medical sanction. Efforts at resuscitation should be continued for at least an hour, even in unfavourable cases, unless, indeed, a medical man is able to certify that the sufferer is undoubtedly dead. Patients recovered from drowning generally require careful after-treatment for a few days, but this is best left in the hands of the medical attendant.

Cases of *Hanging* with suicidal intention may unhappily be met with, and require treatment very similar to that appropriate for drowned cases. Of course, the first step is to cut the sufferer down, and loosen the ligature round the neck. Cold water should then be dashed over the head and chest, and if no breathing is thereby excited, recourse should be had at once to artificial respiration, as above described. In cases of hanging it may be necessary to bleed the patient from the jugular vein, or temporal artery, in order to relieve the congestion of the head, but neither of these operations can be safely undertaken except by a medical man.

Suspended animation from *Foul Gases* is most commonly met with in connection with breweries, where the carbonic acid gas is apt to collect in the large vats used for brewing; or in wells, where the same gas collects and is dangerous to any workmen descending to repair pump-tubes, &c. As in these accidents several lives are often unnecessarily sacrificed in the well-meant but ignorant efforts made to rescue the first sufferer, it may not be out of place to say a few words as to the best method of dispersing the noxious gases, and removing those who are suffering from their influence. When one man has fallen insensible under the influence of the carbonic acid, it is simply suicide for another to attempt to rescue him without proper precautions. These consist in having a strong rope securely fastened round his waist, so that he may be drawn up at once if overcome, and *another* similar rope to be carried in the hand and to be attached to the first victim. The mouth and nose should be thoroughly muffled with a woollen comforter or handkerchief, and the rescuer should breathe as seldom as he can whilst attaching the rope to his fallen comrade. If sufficient assistance is at hand, efforts should at the same time be made to disperse the carbonic acid gas by throwing down buckets of water. By this means the ordinary atmospheric air will to a certain degree be mixed with the deleterious

vapour, which, being heavy, will speedily find its way through an opening in the bottom of a vat, if such can be rapidly made by opening a trap, or cutting out a plank. A garden-engine and hose, if at hand, may be used to pump fresh air to the sufferers, and a fire-engine, if obtainable, would be a still more efficient instrument. When the sufferer is at last placed in safety, every effort must be made to establish respiration in the manner already explained under the head of drowning. It is most important that a free access of fresh air should be allowed to him by avoiding all crowding of anxious relations and friends around the patient.

Insensibility from *Sunstroke* is occasionally met with in the summer months, from exposure in the hay-field, &c. The patient complains of violent pain in the head, and in bad cases becomes rapidly insensible, the face being flushed and the head hot. The treatment is to remove the sufferer into the shade, and to apply cold water freely to the head and nape of the neck. The head should be supported, and cold water (iced if possible) poured from a height upon it. At the same time mustard poultices may be applied to the calves of the legs, and medical aid should be immediately summoned.

The same treatment would be appropriate to a case of apoplexy, care being taken, however, not to prolong the cold affusion, as the patient's strength might not be able to bear it.

Cases of insensibility from *Intoxication* or *Poisoning* should be seen by a medical man as early as possible. No harm, however, can be done in any case by inducing vomiting, and this is most readily accomplished by tickling the interior of the throat with a feather, if the patient is unable to swallow, or if he is able, by the administration of an emetic of warm mustard-and-water. All constriction about the neck and chest should be removed, and the patient placed on his side with the head slightly raised.

Frost-bite.—The effects of cold, if severe, are scarcely less dangerous than those of heat, though not so frequently met with, in this country at least. Probably the commonest form of frost-bite is the ordinary *chilblain*, and its close resemblance to a burn is shown by the fact of a vesicle forming and leaving a sore behind it just as if the part had been burnt. As the worst thing for a burn is to apply cold, so the worst thing for a frost-bite is to apply heat, and this is frequently seen in the case of people who put their cold feet to the fire, and so produce the chilblains of which mention has been made. A frost-bitten part loses its natural colour, becomes of a tallowy-white, feels numbed and insensible, and, if not judiciously treated, may mortify and drop off. The proper treatment is to restore the circulation in the part, *very slowly* and gradually, and for this purpose friction should be used with the hand containing snow, or dipped in ice-water. The patient should be kept from the fire, and in an airy room, until the sensation in the limb and its colour are fully restored. When a limb is really severely frost-bitten, immediate recourse should be had to medical advice, as the patient may lose a part of it or hardly escape with his life. A person who has been long exposed to a low temperature, particularly if either very young or very aged, or in feeble health, may be so completely overcome as to be in very considerable danger. The first evidence of this is a drowsiness, which becomes after a time perfectly irresistible, but which, if indulged, is equally

fatal. Every effort should be made to rouse the patient, and to keep him awake until shelter is reached, when, if already passed into an insensible condition, medical aid should be at once summoned. In the meantime, the patient should be stripped and wrapped in a blanket, and friction of the limbs with the hands should be carefully and steadily carried on. A little warm milk may be cautiously administered with a spoon pushed well back into the throat, and, if an enema syringe is at hand, some warm water or milk may be thrown up into the bowels. Recourse should be had to artificial respiration, if the patient does not breathe even slightly; but for instructions how to carry out this recommendation the reader is referred to the remarks on the treatment of drowning, a much more common casualty than severe frost-bite.

Gunpowder Accidents, though similarly treated to burns and scalds, must be confided to professional hands, if possible. The effect of the explosion of gunpowder upon the patient differs according to the proximity and the force of the explosion. Loose or slightly compressed gunpowder, as in a "squib," scorches the patient by its explosion, and is apt to carry unburnt grains of the powder into the skin. These leave an ugly and almost indelible mark; for though it is true that the grains of powder may be picked out with a needle, few sufferers will endure the operation, which is necessarily painful. The explosion of tightly-compressed powder, as when contained in a powder-flask, is of a most violent character, and is sure to lead to such injury of the hand which holds it as to require immediate surgical attention. This accident is, in fact, only mentioned here in the hope that a hand may be saved by calling attention to the foolhardy feat which so often recurs with the same disastrous result—the pouring powder from a flask into an open fire. Of course a complete train is thus established from the fire to the flask, with the most dreadful results to the foolish performer of the experiment.

Gun-shot Injuries, and particularly those occurring in civil practice from the incautious use of fowling-pieces, are always most serious in their nature, and require most skilful professional treatment. As some time must ordinarily elapse between the occurrence of the accident and the arrival of the surgeon, it may be well, however, to indicate the treatment to be pursued. In the first place, the bleeding should be arrested by binding up the wound in the manner already described. Secondly, as the patient will be certain to be suffering severely from "shock," it will be advisable to keep him in the recumbent position, to apply warmth to the extremities, and—if the bleeding has been controlled—to give stimulants cautiously. We take this opportunity of calling attention to the folly—we may almost say wickedness—of pointing any weapon, whether believed to be loaded or otherwise, at another person in jest. Such jests have so frequently turned out to be miserable and irremediable mistakes, from the gun being unexpectedly loaded, that we very strongly maintain that from earliest childhood every boy should be forbidden to point even a pop-gun at a living person.

Injuries from Chemicals are comparatively rare accidents, though they may prove most serious in their results. The application of any of the strong mineral acids—nitric, sulphuric, or hydrochloric—to the surface of the body will char the cuticle, and, if not immediately washed off, or neutralised with an alkali—soda,

potash, or lime—will eat into the part, giving rise to excruciating pain and destruction of the tissue. In the same way the application of the *caustic* alkalies will destroy the surface, and require to be neutralised with some diluted acid, of which vinegar is a convenient form. The most serious form of accident from chemical substances is when they are swallowed by mistake, and these cases require immediate and active medical treatment. Pending the arrival of a medical man, no harm can be done in any case by administering olive oil or uncooked eggs; but the surgeon will of course use his discretion as to the means to be subsequently adopted.

Particles of *quick-lime* are occasionally blown into the eye, and produce very serious mischief if not immediately attended to. Since it is the contact with the tears which produces the caustic effect, it is of no use to merely bathe the eye with water, and fortunately an antidote is at hand in vinegar, which, when mixed with water and applied to the eye, produces an insoluble salt of lime, and arrests the mischief. When all pain has been allayed by the use of the vinegar-and-water, a drop of castor oil placed between the lids will give great comfort to the patient; but medical advice should be sought if there are, as will frequently be the case, white marks left upon the surface of the eye-ball.

Foreign Bodies introduced into various parts of the body cause more or less mischief; and, as a rule, the earlier they are removed, the better for the patient.

Dust in the Eye is a familiar example, and is very distressing from the irritation in that sensitive organ which it immediately excites. When the foreign body is merely lying beneath the eye-lid it can often be immediately removed by drawing the upper lid well down over the lower, and then allowing the eye to be slowly opened, when very generally the intruder will be entangled in the lower lashes and thus removed. If this little manœuvre, repeated once or twice, does not prove successful, it will be necessary to turn the upper lid up, so as to expose its under surface. This can be accomplished by a non-professional person with a little care, and without any risk of injuring the eye, as follows:—The patient being seated, and leaning his head back against the operator's breast, the latter, holding an ordinary bodkin in one hand, presses it gently on the outside of the lid, and about half-way down. With the fingers of the other hand he then seizes the eye-lashes, and, drawing the lid a little forward, turns it up over the bodkin. This will be accomplished readily enough if the operator is steady and the patient willing, and the whole surface of the eye will then be exposed, when the foreign body can be seen and removed. If, however, the particle is of a pointed character—*e.g.*, a piece of steel—and is embedded in the cornea, or transparent covering of the eye-ball, the assistance of a surgeon should be at once obtained to ensure its safe and early removal. In any case of injury to the surface of the eye, the application of a drop of castor or other oil, as recommended in the previous section, will be found of great service.

Foreign bodies are often introduced by children into the *nose* or *ear*, in sport, and are generally of a more or less globular form, such as beads, pebbles, cherry-stones, or beans. These, if near the orifice, may be readily hooked out with one of the common ear-picks found in ladies' dressing-cases, or with the loop of a

common hair-pin ; but if more deeply placed, injudicious poking with instruments may do harm, especially in the ear, and it is better to have recourse to the injection of a stream of warm water with a good-sized syringe, by which the interloper may be washed out. In the case of the nostril, a violent sneeze, induced by the inhalation of a pinch of snuff or pepper, will often dislodge the obstacle ; but if recourse is had to syringing, the best method is to inject the water through the *opposite* nostril, when, if the patient leans forward, and keeps the mouth open, the water will run round the back of the nose and out at the affected nostril, bringing the foreign body with it. The vulgar notion that “earwigs” have a tendency to find their way into the ear is a popular delusion, but as it occasionally happens that an ant or other small insect enters the ear, and gives rise to pain and irritation, it may be well to mention that the simplest way of relieving the sufferer is to place the head horizontally and to fill the ear with water, when the insect will be at once floated out of the cavity.

Foreign bodies in any part of the *wind-pipe* are always serious, and may be immediately fatal. The accident commonly happens from a child having some plaything, such as a bean, small marble, bead, or nut-shell, in its mouth, and being desired to take it out, when, either in the hurry to obey, or possibly from its disinclination to do so being quickened by a cuff, the foreign body slips into the wind-pipe, and produces serious mischief. In the well-known case of the late Mr. Brunel, the eminent engineer, whose life was endangered by an accident of this kind, it arose from his performing a conjuring-trick with a half-sovereign in his mouth, and the coin slipping into his wind-pipe. When the foreign body becomes fixed in the upper part of the wind-pipe or larynx, so as to obstruct the breathing, the patient becomes black in the face, and falls back apparently dead. This sometimes happens during a meal, from a child or grown-up person happening to cough while eating, and thus drawing a piece of food into the air-passages. Whatever the cause, a bystander should, without hesitation, thrust his fore-finger to the back of the throat, and endeavour to hook up with it the offending body, and this can often be done, when the patient will at once breathe again. If this method is not successful, the patient, if a child, should be held up by the legs and be smartly thumped between the shoulders, when not improbably the foreign body will drop on to the floor, and the child will then begin to respire and cry ; but if respiration is still suspended, cold water dashed on the chest will probably rouse it, or, if not, recourse must be had to artificial respiration, as described under the head of *SUSPENDED ANIMATION* (page 723). Of course, medical aid will be summoned at once in any case of serious choking, if possible, but the majority of these cases do very well without it. If, however, the foreign body is not dislodged by the efforts of bystanders, an operation will be necessary to save life, and every moment will be of importance. Even if the urgent symptoms have passed off, and the child appears to be restored to health, yet, if the foreign body has not been *found*, the advice of a surgeon should, nevertheless, be sought at once, as it may still be lodged in the deeper air-passages, where it may cause fatal mischief if not dislodged at an early period.

Foreign bodies seldom lodge in the *gullet*, and such obstacles as fish-bones can

generally be got down safely into the stomach by swallowing a large mouthful of well-masticated bread. In cases where this does not succeed in removing the bone, a medical man should be sent for, who can, by a very simple treatment, get rid of the obstruction. The most serious obstruction is a set of false teeth, since the plate upon which they are fixed is apt to become entangled in the mucous membrane, and necessitate a serious surgical operation. The best way to avoid such an accident is for the wearers of artificial teeth on no account to go to bed with them in their mouths, since it is usually during sleep that the accident happens.

Foreign bodies, such as coins, often pass into the *stomachs* of children, and give unnecessary alarm to their friends. In the great majority of cases such articles would pass through the intestines without any treatment, but certainly the worst treatment possible is to give the child purgative medicine, as is so often done. Either an emetic of mustard-and-water should be administered at once, so as to bring up the foreign body, or, if the case is seen too late for this, every effort should be made to cover it over with more or less adhesive food, so that it may pass readily through the bowels. Pins or needles when swallowed should always be treated in this latter way. The best regimen for a child under these circumstances is plenty of bread-and-milk, with common hard dumplings and bread-and-cheese for his dinner, and a careful avoidance of fruit, &c., until the indigestible body has come away.

TEETHING.

The Gums and Teeth.—The proper care of the teeth as organs most essential for the preservation of health cannot be too strongly impressed upon parents. Many of the illnesses of childhood are directly connected with the eruption and development of the teeth; and these will be more particularly referred to in other papers, the object of the present article being only to point out those facts in connection with the teeth which every well-educated father and mother should be acquainted with. Each individual has two sets of teeth, the temporary and the permanent; the former being contained in the jaws at birth, and taking their proper positions within the first three years of childhood, the latter being at the same time developed in the jaws, and appearing from the sixth to the twenty-first years. The temporary teeth are twenty, and the permanent thirty-two in number. In the illustration (Fig. 23), taken from the jaws of a child of from six to seven years old, the whole of the temporary teeth are seen in their proper positions, and in addition, the crowns of four of the permanent teeth have appeared through the gum at the back of the temporary set. The remaining permanent teeth are those embedded in the jaws, and at present imperfectly developed.

The teeth of the two jaws correspond in number and form, and the temporary teeth are as follows:—In the centre of each jaw are four cutting or incisor teeth; on each side of these is a pointed canine or eye tooth; and beyond these again two grinding or molar teeth. In the permanent set the teeth are of course larger, and are the following:—There are four incisors, two canine, and four small pre-molar or bicuspid teeth, as in the child; but, in addition, there are on each side three large

grinding or molar teeth, the last of which is called the wisdom-tooth, from its being cut only when years of discretion are supposed to have been reached.

The period at which each tooth makes its appearance through the gum is pretty constant, though it will depend somewhat upon the growth and health of the child. On an average, the central incisors are cut about the seventh month; the lateral incisors from the seventh to the tenth month; the front molars from the twelfth to the fourteenth month; the canines from the fourteenth to the twentieth month; and the back molars from the eighteenth to the thirty-sixth month. The permanent teeth appear in a different order, the earliest being the first molars; and these appear in the sixth year, and take their places immediately behind the temporary teeth.

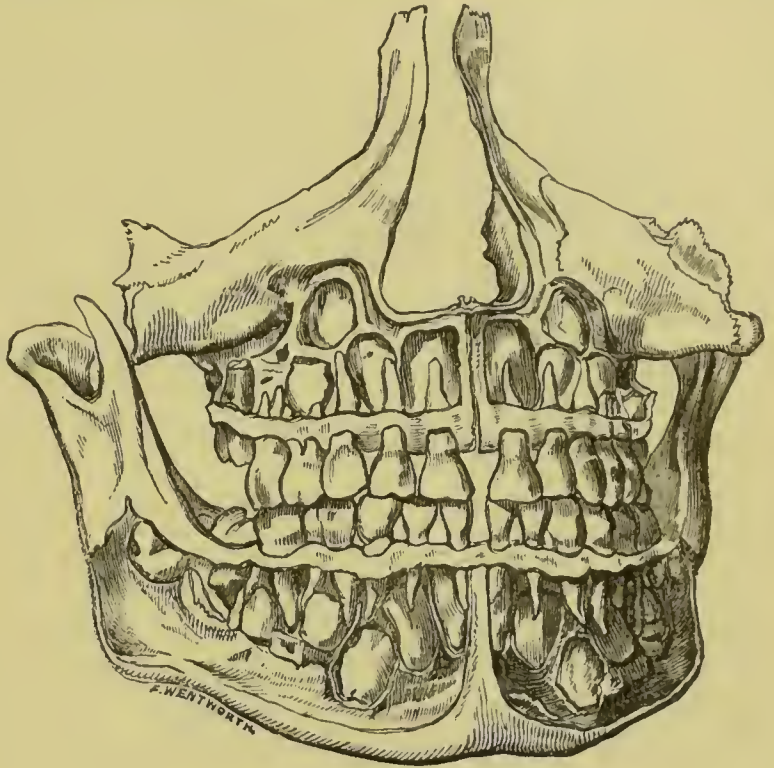


Fig. 23.

The two middle incisors are cut about the seventh year, and these necessarily displace all four of the temporary teeth; the two lateral incisors appear in the eighth year; the first bicuspid in the ninth year; the second bicuspid in the tenth year; the canines from the eleventh to the twelfth year; the second molars from the twelfth to the thirteenth year; and the wisdom-teeth from the seventeenth to the twenty-first year. It is to be understood that the above enumeration applies to both jaws, but that the teeth of the lower jaw are usually a little earlier in their appearance than those of the upper jaw.

Lancing the Gums.—When an infant is cutting its teeth its mouth is hot, and the gum is swollen and tender. Great relief may be afforded, and even its life may be saved, should it be subject to convulsions, by freely lancing the gums. This operation should of course be performed by a medical man, if one can be procured

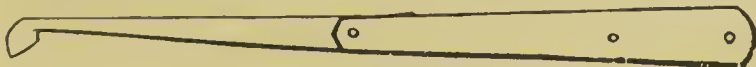


Fig. 24.

but, in case of urgent need, a parent would be justified in performing it himself, if provided with a proper in-

strument, and having some knowledge of the subject. The gum-lancet is a steel instrument of the shape shown in Fig. 24, and may be procured of any surgical instrument maker. In lancing the gums of the lower jaw it will be most convenient to have the infant held against the breast of a nurse, and in the sitting

position, when the operator, sitting or kneeling in front, must steady the jaw with the left hand, as shown in Fig. 25, and with the right make a steady cut on the top of the inflamed gum down to the crown of the tooth, against which the edge



Fig. 25.

of the lancet should be made to grate. In lancing the gum of the upper jaw, the infant may be most conveniently held on the knees of a nurse, and with the head fixed between the knees of the operator, who can then lean over and see clearly what he is about. Lancing of the gums should only be resorted to when the tooth makes a prominence through the gum, and it will therefore usually make its appearance in a day or two. If, however, the gum has been lanced a little prematurely, no harm will have been done, the gum being more yielding after than before the operation, and the hæmorrhage,

which is never of any amount, serving to relieve the over-distension of the part.

Care of the Teeth.—The temporary teeth require some supervision on the part of the parent, as the child is too young to do more than complain if he is in pain. Children who have suffered much from infantile diseases almost invariably have badly-developed and unsound first teeth, but may, if well cared for, grow up strong and vigorous, and with sound permanent teeth. It is a common error to suppose that the administration of medicine has caused the early decay of the first set, or the unsightly markings sometimes present on the second set of teeth, whereas it is the disease for which the remedies were given which has left its trace behind. The molar teeth, both of the first and second set, are most liable to decay, and a child's mouth should be carefully examined from time to time to see if any of these teeth are discoloured or hollowed out. If they are, the child should be at once taken to a dentist, to have the diseased tooth stopped before it becomes painful, so that it may not become necessary to extract it before its full time. As the permanent molar teeth take up their position behind the temporary teeth, it is most important, for the full development of the jaw and the proper arrangement of the teeth, that the temporary teeth should not be extracted too early. At the same time, if the jaw should be small, and the teeth are taking up irregular, and perhaps too prominent positions, it may be necessary to extract even some of the permanent teeth at once, in order to allow the others to take their proper places. For this purpose a parent should consult some respectable dentist, carefully avoiding all unqualified practitioners, and should be careful to see that all the directions he gives are carried out, and particularly that any mechanical arrangement which may be necessary in order to bring irregular teeth into position is fairly and fully attended to.

Later in life, in addition to the ordinary cleaning of the teeth with tooth-brush and powder, or soap, it is well to pay an occasional visit to the dentist to have the "tartar," or earthy matter deposited by the saliva, removed from the front teeth. Even in the most cleanly mouths this is apt to collect and injure the gums, if it does

not the teeth also ; and, as it is very tenacious, it requires some skill for its removal. At the same time the dentist should be requested to inspect all the teeth, in order to detect the first inroads of disease, so that by careful "stopping" the mischief may be arrested. The nature of the stopping to be applied in each case must of course be left to the discretion of the dentist, but a patient should on no account consent to the insertion of a cheap "amalgam" stopping into any of the front teeth, since this always leads to great discoloration of the teeth, and consequent disfigurement. When toothache supervenes upon decayed teeth, recourse must of course be had to the dentist, who may, in favourable cases, contrive to save the tooth by destroying the nerve and then carefully stopping the cavity. Extraction is the last remedy, and has recently been robbed of nearly all its horrors by the introduction into dental practice of the administration of the nitrous oxide gas as an anæsthetic. This gas, when carefully administered in its pure state, has the power, like chloroform, of rendering the patient perfectly insensible, but has this advantage over chloroform, that the insensibility is much shorter, and that recovery from its influence is immediate, and unattended with sickness. Many dentists are in the habit of administering this agent for all cases of extraction of teeth, but no person should take this, or any other anæsthetic, without first consulting his ordinary medical attendant.

Toothache is perhaps the most agonising pain to which one can be subject. If, from circumstances, immediate recourse cannot be had to a dentist, relief may sometimes be obtained temporarily by the insertion of a pledget of cotton-wool soaked in laudanum into the hollow tooth, and by the application of warm fomentations to the face. Several specific remedies are sold, which are certainly efficacious as a temporary application in cases of toothache, and the introduction of a few drops of warm laudanum into the ear often does good. The formation of an abscess around a tooth may be known by the deep-seated throbbing pain it gives rise to, and the extraction of the tooth is the only certain way of obtaining relief.

False Teeth are exceedingly healthful, by supplying the lost power of mastication ; and no one who has lost his back teeth should hesitate to have the want supplied artificially, both for his own comfort and also for the preservation of the front teeth, upon which an undue amount of work would otherwise be thrown. Artificial teeth can be had of every price, but here, as elsewhere, we would say, avoid an unqualified dentist, whose cheap teeth would be dear at any price, since the purchaser would have no comfort in wearing them. The question of the necessity for extracting the stumps of teeth must be left to the judgment of the dentist ; but if, as often happens, it is advisable to remove some, it will be necessary to wait some weeks before the model of the mouth can be properly taken so as to ensure a proper fit. One caution only need be given with regard to false teeth, that they should always be removable at will, and should invariably be removed from the mouth when the wearer goes to bed.

Inflammation of the Tonsils constitutes one of the common varieties of "sore throat." The sufferer experiences pain and difficulty in swallowing, and talks with a peculiar thick voice, which is very characteristic. On looking into the throat the back part of it is seen to be red and inflamed, and the tonsils are found to be almost blocking up the passage. If there is much fever and constitutional disturbance, a

medical man should be consulted at once, but the best domestic treatment consists in frequently gargling the throat with hot milk-and-water, and the application of linseed-meal poultices round the throat. The bowels should be thoroughly relieved with an ordinary aperient, and the patient should be fed with nourishing food, in the form of soup or broth, and will probably be the better for a glassful or two of port wine. If an abscess forms in the tonsil, it may produce symptoms of suffocation, and a surgeon should be at once called in to open it. An abscess may burst of itself into the throat, and thus give relief, but only after many hours' suffering.

Enlarged Tonsils are often found in young persons of delicate health, and give a peculiarly vacant appearance to the countenance by obliging the sufferer to keep the mouth constantly open, and to breathe heavily. A more serious consequence of enlarged tonsils is, however, the effect upon the chest produced by the imperfect admission of air to the lungs, the tendency to the deformity called "pigeon-chest" being common in these cases. The treatment should be both constitutional and local—good wholesome food with tonics and plenty of fresh air may alone effect a cure. Cod-liver oil, syrup of iodide of iron (Pr. 4), citrate of iron (Pr. 3), and Parrish's Chemical Food in tea-spoonful doses are all useful. It is a good plan to swab out the back of the throat from time to time with glycerine of tannin. In old long-standing cases the only effectual treatment is for the surgeon to remove a portion of each tonsil; and this can be safely done even in young children.

Gum Boils are usually the result of the irritation set up by a decayed tooth, but they may be excited by a simple cold. There is generally pain in the tooth, spreading over a portion of the jaw, with heat, throbbing, swelling, and perhaps formation of matter. The pain is acute, especially at night, and the temperature is usually slightly elevated. The aconite mixture (Pr. 38) is useful in the early stage, but when matter has formed, the sulphide of calcium pilules (Pr. 68) should be given to promote its discharge. Warm applications to the gum often do good, a small linseed-meal poultice or a roasted fig put on as hot as can be borne, may be used for this purpose. Powdered alum dusted over the part is useful.

BUNIONS, AND AFFECTIONS OF THE FEET AND LEGS.

Bunion is a painful deformity of the joint of the great toe, due to the wearing of narrow and ill-made boots, by which the toes are crushed together, and the great toe bent out of its proper position. Its treatment will be found fully discussed under BUNION, in our articles on the TREATMENT OF DISEASES.

Corns are usually due to the irritation of badly-fitting boots. See CORNS in the TREATMENT OF DISEASES.

Ingrowing Toe-nail is another result of sacrificing health and comfort to fashion, in the form of tight boots. The great toe-nail, when healthy, is very slightly curved, and is broad and thin; when, however, the toes are crushed together, the nail of the great toe becomes more curved than natural, and presses into the tender skin on each side, and if the slight inconvenience at first experienced does not warn the sufferer to seek relief, he will find matters rapidly going from bad to worse, inflammation being set up on each side, and exuberant painful granulations springing up and overlapping the edges of the nail, as seen in Fig. 26. In the early

stage of this disorder, when the nail first begins to excite irritation, the immediate abandonment of narrow boots and the careful insertion of a small pledget of cotton wool in the groove on each side of the nail will generally effect a cure; but if this is not enough, with a sharp pair of nail-scissors a small slip of the nail on each side should be removed, without going down to the *matrix*, or "quick." In many persons this occasional removal of a slip of nail is a necessary and painless operation, though some prefer to scrape away the centre of the nail, so as to thin it until it bends readily, which in our experience is both a painful and useless operation. A better plan is to let the nail grow long and to cut a notch in the centre of it—as shown in the illustration, Fig. 26—when the growth takes place chiefly at this spot, and the edges do not appear to encroach so rapidly upon the soft tissues. When the irritation has been allowed to go to the extent which we have shown in the illustration, the advice of a surgeon should be immediately sought, as it may possibly be necessary to remove part of the nail in its whole length—an excessively

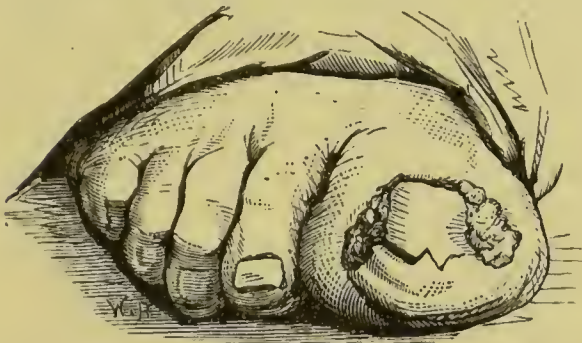


Fig. 26.

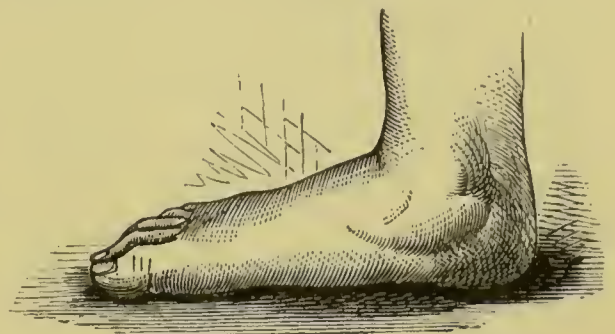


Fig. 27.

painful operation, for which the administration of chloroform, or some other anæsthetic, will be found necessary.

Flat Foot occurs very generally in young persons who have had their strength overtaxed in carrying weights—for example, among nursemaids and errand-boys—though it may occur later in life, as is seen in the case of soldiers and policemen, and others who are on their feet during many consecutive hours. The sufferer finds the feet remarkably tender and painful after walking, and if it be neglected the distortion becomes so confirmed as to render him quite lame. In a flat-footed person, if he be made to stand up with bare feet, it will be seen that the arch of the foot has been more or less broken down, as shown in Fig 27, so that instead of the weight of the body coming upon the extremities of the arch—the heel and the ball of the great toe—the centre bones have fallen down and touch the ground, and hence the pain. The great object of treatment is to support the bones of the foot until the ligaments which have become relaxed shall have again become braced up. With this object in view, the sufferer should avoid much walking, and especially the carrying of heavy weights, and should have his foot carefully bandaged, as shown in a preceding paper. In order to restore the arch of the foot, the best plan is to have a piece of cork fitted to the inside of the boot so as to press up the fallen bones as much as the patient can bear without pain. After a time, as the foot improves, this can be increased in thickness, and so eventually the arch of the foot will be

restored. When this has been done, a metal spring in the "waist" of the boot, as in the "Flexura" boot, is useful in preventing a return of the complaint.

Weak Ankles are common accompaniments of "flat foot," or may exist alone. The sufferer is found to "tread over" considerably in walking, and is often conscious that the ankles yield during walking, the foot having a tendency to turn on its side. The best remedy is well-made lace-up boots, with the sides made stiffer than usual, those with elastic sides giving no efficient support. In children who frequently suffer from enlargement of the ankle-bones, bathing with Tidman's sea-salt and water, or sea-water, and the administration of cod-liver oil, are very useful remedies.

Bow Legs are common in "rickety" children who have been put upon their feet too soon, and are, therefore, more common among the poorer classes than among those who have attendants to carry them when young. The earthy material of the bones of these children being deficient in quantity, their legs bend with the weight of the body, and if not attended to the deformity will be permanent. The great point is to improve the little patient's health by sufficient and proper food, and particularly by supplying it with genuine and unadulterated milk and wheaten bread, both of which articles of diet contain the earthy salts necessary for the formation of bone. Fresh air and, if possible, the sea-side, are very advisable if they can be procured, and the medical treatment must be carefully carried out under the direction of a competent adviser. As regards the use of apparatus for the treatment of this and every other form of deformity, the parent should be guided by the advice of a surgeon, and not by that of a self-interested instrument maker. Many slight cases of bow legs do perfectly well without any apparatus at all, and in most cases a simple lath on the inside of the leg, with broad webbing straps and buckles, is as efficacious for the treatment, and better, because lighter, for the child, than complicated and expensive steel and leather supports.

Knock Knees occur generally in youths who have somewhat overgrown their strength, and particularly in those who have been in the habit of walking or running a good deal. The ligaments of the knee-joints become weakened and gradually yield, and the lad finds that the knees are apt to touch in walking, causing the trousers to wear out on the insides of the legs, and giving to the individual a very ungainly appearance, with more or less pain in the knees themselves. The patient's health should be improved, and he should avoid walking; but if able to obtain horse exercise may avail himself of it with advantage, as it will tend to bow the knees out, as is seen in an exaggerated form in grooms and jockeys. With the same object in view, he may sleep with a pillow between his knees, and with the ankles fastened together by a silk handkerchief. A simple alteration in the sole of the boot is very useful in slight cases of this kind. It consists in having the heels of the boots prolonged on the inner side along the "waist" of the boot, the effect of which is to throw the foot slightly on one side, and thus counteract the in-bowing of the knees; the boots should be strong lace-up ones, so as to well support the ankles, which might otherwise yield. In severe cases of knock knee, it will be necessary for the patient to be confined to the sofa, and wear proper apparatus under the direction of a surgeon.

Housemaid's Knee is, as its name implies, an affection common among domestic

servants who kneel to scrub floors, &c. The little bag, or "bursa," beneath the skin of the knee and in front of the knee-cap is apt to get inflamed and swollen from the pressure it sustains, and is then often very painful, and the part looks red and swollen. Hot fomentations and poulticing, with rest for a day or two, will generally effect a cure; but if not, and the part throbs, the advice of a surgeon should be at once obtained, as possibly an abscess may have formed. In some cases there is no pain or heat, but a swelling is formed in front of the knee (as seen in Fig. 28), which gives inconvenience in kneeling. This will often subside by avoiding the practice which has given rise to it, and by painting the skin over it daily with tincture of iodine; but if it does not disappear it should be shown to a medical man. In all cases in which it may be a matter of necessity that work should be continued as usual, the sufferer should be very careful to provide herself with a soft pad of carpet, or matting, to kneel upon, to prevent, if possible, any increase of the inflammation.

Hip Disease is only mentioned here because its onset is so insidious as often to be overlooked until the disease has made considerable progress; and as treatment, to be efficacious, must be early, it is important that parents should have their attention called to the first symptoms of the disorder. The disease generally occurs in weakly children, and may date from a fall which gave rise to no special symptoms at the time. The child is noticed to have a slight limp, and complains very probably of pain in the *knee*, and not in the hip itself, unless that part is touched. These symptoms are quite sufficient to justify recourse to the surgeon, whose directions should be strictly carried out for many weeks, or even months, if necessary, to effect a cure.

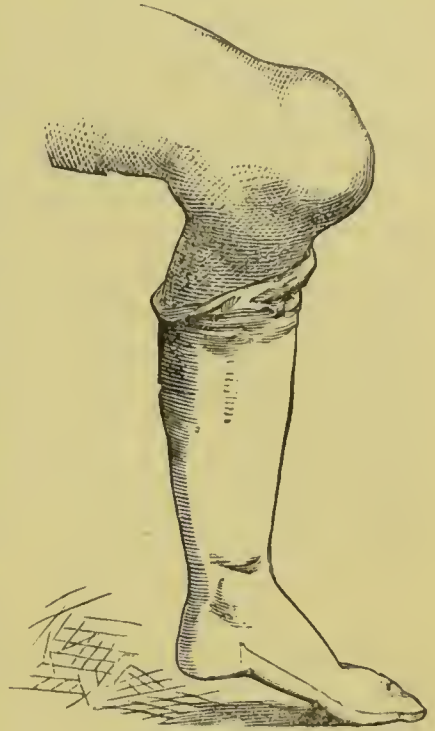


Fig. 28.

VARIOUS LOCAL AILMENTS.

A Cold in the Eye.—This is a very common affection, and consists in an inflamed condition of the membrane covering the eye-ball and lining the eye-lids, and is often due, as the name implies, to exposure to a draught. The patient feels as if some dust had got into the eye, and can sometimes be hardly persuaded to the contrary; the white of the eye itself is seen to be reddened, and there is a constant flow of blinding scalding tears. The best treatment is to foment the eyes with pure warm water, or better, with water in which two or three crushed poppy-heads have been boiled for half an hour, to extract their sedative qualities. A shade should be worn over the eyes in the intervals of fomenting, and a dose of rhubarb and magnesia should be administered. If the inflammation does not subside in a day or two a doctor should be consulted if possible; but, if this is not possible, good will probably be done by dropping into the eyes, two or three times a day,

some solution of sulphate of zinc or white vitriol, in the proportion of one grain to two table-spoonfuls of water.

Strumous children, especially when improperly fed, often suffer from another form of inflammation of the eye, in which the chief symptom is intolerance of light, the child using its hands to exclude the light as much as possible, or, if in bed, burying its head beneath the clothes. These cases require careful local and constitutional treatment, for which medical advice should be sought; but, wanting this, the little patient will be much relieved by having its eyes frequently bathed with cold water, and wearing a green shade over them.

New-born children occasionally suffer from another disease of the eye, of which the chief symptom is a discharge of yellow fluid or *pus* from beneath the lids, which are apt to be glued together by the discharge drying on them. This is a very serious affection, since the sight of the eye may be utterly lost if it is neglected, and medical advice should, therefore, be obtained. In its absence the eye should be carefully washed out several times a day with warm water, and a lotion of alum, in the proportion of ten grains to an ounce of water, be thoroughly applied. In doing this the greatest care must be taken not to convey any of the yellow fluid into the eye of another person, since it is highly contagious, and will certainly lead to violent inflammation of any eye it may happen to touch.

In washing a child's eye, the best plan is for one person to hold it firmly on its back, with its head secured between the knees of the nurse who is to wash it, and its body resting on the knees of the assistant. Gently separating the eye-lids with the fore-finger and thumb, the nurse then lets the water or lotion trickle in between them from a small, clean, and soft sponge, then wipes the lids gently with the sponge, and repeats the operation on the opposite eye. When eye-drops have to be applied the same position should be adopted, and the drops may be conveniently extracted from the phial and inserted between the lids with an ordinary quill-pen, the nib of which has been rounded off. In making a shade for the eye, a piece of cardboard large enough to cover both eyes, and shaped out so as to fit the forehead, should be covered with green silk, and attached by a ribbon round the forehead.

A Sty in the Eye is a little abscess formed at the edge of the eye-lid by the inflammation of one of the little follicles which lubricate its edge. It generally occurs in persons out of health, or in strumous children, and is apt to occur again and again until the health is improved. At the commencement of the disorder the part is sure to be swollen and red, and feels hot and uncomfortable to the patient; then it begins to throb, and matter forms, as is shown by the yellow point in the centre of the "sty." When this is let out, or discharges itself, the inflammation subsides, and the lid gets well rapidly. In the early stage the only treatment is to bathe the eye frequently with hot water, and at night to put a bread-and-water poultice over it. When the matter forms it may be pricked and let out with a needle, if the patient will be steady enough to allow this to be done without danger to the eye, though there is a popular but unfounded prejudice that any interference with a sty leads to the formation of others.

The formation of an abscess on the inner side of the eye, close to the nose, is a

much more serious thing, as it involves the passage by which the tears reach the nose, and will require early and careful surgical treatment, or a very disfiguring scar may result.

Whitlow is a very common affection, and one which, in its simpler forms, may be treated domestically without danger. The simplest kind of whitlow is that which forms about the root of the nail, and which may, or may not, depend upon some trifling injury, or upon the introduction of some irritating substance beneath the skin. At first the finger is found to be tender and hot, and soon a sense of throbbing is experienced in it. This is relieved by holding the inflamed part in hot water, and by poulticing; but, in all probability, *matter* will form, and will be seen as a white fluid, either beneath the nail itself, or raising the skin around its root. The pain is now severe, owing to the matter being pent up, and immediate relief will be obtained as soon as it is evacuated. If beneath the nail, the best plan is to remove a small wedge-shaped piece of the nail with sharp-pointed scissors, so as to reach the point where the matter lies, and this can be generally effected without pain to the patient. If the skin around the nail is distended with the matter, it should be freely incised with a lancet or sharp and clean penknife, and this operation, though much dreaded by the patient, is absolutely painless, the skin having already lost its sensibility.

The more severe forms of whitlow require prompt surgical attendance. In one, the end of the finger becomes violently inflamed and swollen, the mischief beginning in the membrane covering the bone. Then an early and free incision down to the bone is absolutely necessary, in order to save it from destruction; but fortunately, even in neglected cases, it is seldom, if ever, necessary to perform amputation for this complaint, the surgeon being able to extract the piece of dead bone, and leave a very useful though somewhat shortened finger. In another and more severe form of whitlow, the matter forms in the finger and palm of the hand, both of which become immensely swollen; and here a skilful incision is necessary, in order to evacuate the matter without damaging the important structures of the palm of the hand, or leading to stiffness of one or more of the fingers. In case the assistance of a surgeon cannot be obtained, it may be mentioned that the proper place to incise this form of whitlow is in the central line of a finger, and just at the point where it joins the hand. The incision should be not more than half an inch long, and should always be on the palmar surface, or under side of the finger.

Abscesses may form in any part of the body, and are often only evidences of deeper-seated mischief, for which medical advice should be at once procured. In cases of disease of the spine, leading to projection of the bone, and what is commonly called "broken back," an abscess very commonly forms, without any special pain, in the upper part of the thigh, and the same kind of thing may be witnessed in other parts, the patient experiencing no pain, but having an elastic swelling, in which the peculiar and characteristic sensation due to the fluctuation of the contained fluid may be readily felt with the fingers. These chronic or cold abscesses should always be submitted to a medical man, as they may be of great importance, and their treatment requires skill and attention. The more acute abscesses have much the same symptoms as whitlows, there being heat, redness, and tenderness of the part, followed

by a throbbing pain, and tension of the skin from the presence of matter within. Poulticing and fomentations form the appropriate treatment, and, if pursued long enough, will no doubt lead to the breaking of the abscess and the relief of the patient. Many days will, however, be consumed in the process, during all which the patient will be worn out with pain and want of rest, whilst a momentary incision by a surgeon's skilful hand will give immediate and permanent relief. It is very mistaken kindness for the friends to abet a patient in refusing to submit to a moment's pain in order to obtain a cure; and the patient is usually ready enough to express gratitude to those who have been "cruel only to be kind," the moment the relief is experienced. (*See also* page 77.)

Milk Abscess is one of the most common forms of abscess, and is met with in mothers who either have been obliged to wean their child suddenly, or who suffer from "sore nipples," which incapacitate them from nursing. Sore or chapped nipples are more apt to arise after a first than after a subsequent confinement, and may be generally avoided by taking the precaution to harden the nipple by bathing it with weak brandy-and-water for a few days before the birth of the child. If the nipple is very much flattened, it should be drawn out with a breast-pump or glass, or a healthy child of a few months old may be put to the breast as soon as there is any milk. When the nipple has unfortunately become sore, the best plan is to protect it with a nipple-shield of glass, and to dry it thoroughly after being used. Almost any stimulating lotion will then effect a cure: borax, alum, or white vitriol, in solution, are all favourite remedies; but perhaps the most successful is the appli-

cation of a solution of nitrate of silver (two grains to the ounce of water) with a camel's-hair brush, three or four times during the day.

When from any cause a mother is unable to nurse her child, the breast is apt to become gorged with milk, and unless this is got rid of, inflammation and abscess are pretty sure to follow. By the use of the breast-pump, or gentle and equable pressure with the hands, much relief can be afforded, and attention must then be directed to diminishing the flow of milk to the breast by rubbing it with warm sweet oil, or better, by smearing it with extract of belladonna mixed with equal parts of glycerine. At the same time the diet of the patient should be reduced, and a dose of Epsom salts given every morning. A milk-abscess may often be averted by keeping on the inflamed portion of the breast a rag constantly wetted with spirit or eau-de-Cologne and water, which



Fig. 29.

should be allowed to evaporate, particularly if the breast is well supported in a sling, arranged as follows:—A large handkerchief being folded so as to form a triangle, should be applied obliquely across the chest, with the straight part imme-

diately below the breast, one end passing over the opposite shoulder, and the other through the arm-pit of the same side, and the two being tied behind the back. The handkerchief being now slightly unfolded, can be made to support the breast comfortably at any height desired, and the top corner can be brought up over the shoulder, and fastened round the neck, as shown in the illustration. But if an abscess unfortunately forms, as will be known by the occurrence of a shivering fit and the throbbing pain in the breast, the advice of a surgeon should be immediately sought, if it has not been before, in order that he may give relief by an early incision. The patient is often so much reduced by the pain she has undergone as to be unable to nerve herself to sustain this operation, unless her friends are firm in supporting the surgeon in doing his duty. A milk-abscess, like any other, may, as already mentioned, break under prolonged poulticing, but only at the expense of great suffering and very considerable permanent damage to the breast.

A *Gathering* is a small abscess or collection of matter, and it may occur on any part of the body; the most familiar example is a "gathered finger," a complaint with which most of us are familiar. In these cases the painful part should be constantly fomented with hot water, keeping it in as long as possible. Poulticing with linseed meal is very useful, but it is essential that the poultice should be hot and changed frequently. The pain is generally worse when the hand is hanging down, and it is a good plan to support it on the chest by means of a handkerchief, keeping it up as much as possible. Sulphide of Calcium (Pr. 68) often proves useful in these cases. *See also* ABSCESES, page 77 and page 739.

Boils are very common, and very painful affections, and are usually found in persons who have got into a low state of health. A boil often begins in a little pimple, and if this is protected from irritation by being covered with a piece of *papier Fayard*, or soap plaster, whilst the general health is improved by change of air and altered diet, very probably there will be no further trouble. If, however, a regular boil forms with a red surface and great tenderness, it had better be poulticed, and either allowed to break, or—a great saving of time and pain—a narrow knife or a *sharp* blade of a pair of slender scissors being pushed into the centre of it, and to the depth of half an inch, will allow the matter to escape with immediate relief. When a boil has broken, it heals up readily enough under any simple dressing—either a little spermaceti ointment or a piece of wet lint under oil-silk. (*See also* BOILS, under TREATMENT OF DISEASES, page 144.)

Carbuncles are much more serious affections than boils, which, however, they much resemble, except in being larger, and therefore more dangerous to the patient. (*See also* CARBUNCLE, page 171.)

Rupture or *Hernia* means the protrusion of a small portion of the bowels through an opening in the groin or at the navel. It occurs in children from violent efforts in crying, and in older persons from lifting heavy weights, coughing, &c. If a mother notices any swelling in the neighbourhood of the groin in her child (boys being much more liable than girls to this affection), she should lose no time in consulting a medical man, and ascertaining whether this is due to a rupture or to some other disease. In order to effect a cure of a rupture, it will be necessary for the child to wear a properly-fitted truss for some months, and it will be worth a mother's while to pay

every attention to this matter, so as to bring about a cure as soon as possible. It is not necessary that a truss should be worn at night, except in the case of an infant who cries as much at night as in the day, but the mother should see that the child never runs about before the truss is put on in the morning, and must be particularly careful to see that the rupture is pushed back thoroughly before the truss is applied, which is most readily accomplished when the child is lying down. It is convenient in children to cover the truss with a linen cover, which can be changed when soiled, and the greatest care must be taken to prevent the instrument chafing the skin by powdering it thoroughly. In grown-up persons the occurrence of a hernia is of even more importance than in children, since it is more likely in them to become "strangulated," i.e., it cannot be pushed back by the patient himself; obstruction of the bowels results, and this is followed by vomiting, and even by death, unless promptly relieved by the surgeon. In any case, therefore, where a rupture cannot be returned, or when after any exertion a lump has appeared in the groin, the advice of a surgeon should be sought. It unfortunately happens every now and then that a patient suffering from the bilious vomiting caused by a strangulated hernia conceals the real cause of the disease, either from ignorance of the connection between the two affections, or from a feeling of false delicacy. No one is justified in trifling with his or her own life in such a matter, and a medical man will rightly insist upon making the necessary examination if his suspicions are aroused by the symptoms, as they probably will be. When a surgeon finds that he is unable to return a rupture, it will be necessary for him to perform a slight operation in order to save the patient's life, and neither patient nor friends should have any scruple in consenting to this being done at once. Every minute is of importance in these cases, and though it is perfectly true that patients die after the operation for strangulated hernia, it is equally certain that they die in consequence of the operation having been delayed too long, rather than from the proceeding itself.

Started Navel.—This is a not uncommon affection in young children, and if not properly attended to will lead to the formation of a rupture. The treatment consists in preventing the protrusion from taking place until the parts are in process of time restored to their natural condition, and this can only be effected by care and attention on the part of the nurse and mother. The child being laid on its back, and the protrusion carefully returned with the finger, a pad made of a slice of a wine-cork half an inch thick, or a farthing, should be wrapped in a piece of soft linen and applied over the spot, and bound on firmly with strips of plaster half an inch wide. The strips of plaster (the common white strapping) should be about twelve inches long, and should be arranged star fashion; they should be dipped in hot water in order to warm them, as they then stick much more firmly than if held to the fire. A roller of linen or fine flannel should be applied round the infant's navel over this. In cases of larger protrusion either in children or grown-up persons, a suitable abdominal support should be procured from an instrument maker, and should be worn with the same precautions as have been given for the use of a truss.

Piles are often a very troublesome and painful affection, and are of various kinds, each of which requires a different treatment, for which a surgeon should be consulted. They are mentioned here principally in order to impress upon those who

suffer from them and go on for years bearing pain, or even having their health undermined by constant loss of blood, that their disease is curable, and that they should not allow feelings of false delicacy to prevent their applying for relief. As a temporary means of relief, a sufferer may regulate the bowels with occasional doses of "lenitive electuary," and may employ an enema of cold water. Habitual sufferers from affections of the bowels frequently derive very great comfort from relieving the bowels at night rather than in the morning, so as to obtain some hours' rest in the horizontal position after an evacuation. (*See also* PILES, page 454.)

Prolapse of the bowel in children should be gently returned after sponging with cold water. It may be simply the result of debility, or may be a symptom, in boys especially, of a much more serious affection—stone in the bladder—and the advice of a surgeon should therefore be obtained.

Incontinence of Urine in Sleep is very common among weakly children, and is often the cause of great suffering to a child at school, where he is punished for what he is quite unable to help. Careful supervision will often effect a cure by avoiding too long intervals of unbroken sleep, and the use of a night-light will obviate the fear of rising in the night or early morning, which is often a cause of the disaster. As this affection may be only the evidence of more important diseases, it will be well to have medical advice if the occurrence appears to be becoming habitual. The opposite condition of things—retention of urine—is much too serious an affection to be treated domestically, and *immediate* surgical attendance should be obtained for it, at whatever age it may occur. (*See also* BED-WETTING, DISEASES OF CHILDREN, page 3.)

Nævus, Port-wine Stain, Mole, Mothers' Marks.—Nævi are too familiar to need description. They are congenital, and are met with of all shapes and sizes. They are called "Mothers' Marks," from a supposition that they are produced on the child before birth through some fear or fancy on the part of the mother. Sometimes they are called "cherry stains," "strawberry marks," and so on, from their apparent resemblance to the stain of some fruit. When they are covered with hair they are called "mouse marks." Usually they cause no inconvenience, except the deformity they may produce, but occasionally they get sore and give some trouble. Often enough they die away without any interference. It is always a nice question to decide whether they should be let alone or whether an attempt should be made to remove them. On this point it will be necessary to take the advice of a doctor. It may be laid down as a general rule—to which, of course, there are exceptions—that if they are small, if they occasion but little disfigurement, and if they exhibit no tendency to increase in size, they are best let alone; whilst, on the other hand, if they are large, if they are so situated as to cause disfigurement, or if they are increasing in size, it will be necessary to do something.

Stings of Insects.—The bite of the domestic flea or bug can hardly be said to require treatment, unless the patient is a child with very delicate skin, in which case numerous bites may set up a good deal of irritation, and require the application of Goulard water or a weak gin-and-water lotion.

The single bite of the bee or wasp is painful for a time, and may be best relieved

by the application of an alkali, such as ordinary washing soda, or the more elegant bicarbonate of soda, or a drop of sal volatile. The domestic "blue-bag," used for colouring articles in the wash, has a great reputation as a local application, and deservedly so.

The infliction of a large number of bites by either wasps or bees is a serious matter, and death has followed such an accident. This result is due partly to the amount of poison absorbed, but more probably to the "shock" inflicted on a nervous patient by the sudden attack of a swarm of insects. In such a case the application of olive or almond oil will be the most soothing application, and then care must be taken to extract the stings which may have been left by the insects. The prostration of the patient will be best met by the administration of diffusible stimulants—sal volatile, brandy, or champagne—but the advice of a medical man should be sought without delay.

The sting of the adder is the only common accident of the kind met with in this country. The treatment consists in tying a string tightly round the limb above the wound in order to prevent absorption of the poison, and subsequently in the extraction of the poison by sucking the wound. The limb bitten commonly swells considerably, and friction with warm oil is useful in relieving the pain. The vital powers are severely and rapidly depressed by the absorption of the poison, and must be supported by the free administration of ammonia, ether, brandy, &c.

Bites of Animals.—The dog is the animal whose bite is most commonly met with, though occasionally the cat, rat, or horse inflicts injury in this way. The fear of hydrophobia is always present in the mind of a patient who has been bitten, and the possibility of inoculation of the poison of rabies must not be forgotten, though the frequency of its occurrence is greatly exaggerated. When a person is bitten through the clothes, even by a confessedly rabid dog, he will, in all probability, escape inoculation, and the same thing may be said with greater certainty when the skin is not broken, but only bruised. If a wound is inflicted, a string should if possible be at once tied round the limb between the bite and the heart, and the wound should be well washed and sucked until medical aid is obtained. Failing this, and supposing the dog to be really rabid, it would be justifiable to cauterise the wound thoroughly with lunar caustic or a hot iron, or to mop it out with strong nitric or hydrochloric acid. All these applications are necessarily excessively painful, and could hardly be borne without an anæsthetic, save by the most determined person. The recent researches of M. Pasteur, of Paris, hold out a very reasonable hope that cases of undoubted inoculation with rabies may be successfully treated by subsequent inoculations with animal matters, the nature of which is not at present determined.

MATERIA MEDICA.

INTRODUCTION.

To that department of medical science which treats of the origin, preparation, and properties of drugs we apply the term "materia medica;" whilst by "therapeutics" we mean a knowledge of the effects which follow their administration for the cure of disease.

Medicines are obtained from many and various sources, all three kingdoms of nature being laid under contribution. Some, such as sulphur and lime, and the different salts of iron and mercury, are procured from the mineral kingdom; others, such as aconite, and belladonna, and opium, from the vegetable kingdom; whilst a few, such as cod-liver oil and cantharides, are furnished by animals. Minerals and plants are the chief sources from which we obtain our medicinal agents, a very small proportion of our modern drugs being of animal origin. We no longer use

"Eye of newt and toe of frog,
Wool of bat and tongue of dog,
Adder's fork and blind worm's sting,
Lizard's leg and owlet's wing"

in the composition of our drugs, any more than we believe that snails eaten raw are a positive cure for consumption.

Medicines are imported from all quarters of the globe, almost every country, civilised or uncivilised, furnishing some useful contribution to the healing art. Senna is obtained from India; opium from Asia Minor, Egypt, and Persia; jalap from Jalapa, in Mexico; quassia from Jamaica; bark from the cloudy slopes of the Andes; and ipecacuanha from the Brazils; whilst the animal which yields the musk is a native of the mountainous regions of Central Asia. Fortunately some of our most valuable and popular remedies are furnished by plants which grow at our very doors. Thus the well-known garden plant which is called in this country monkshood or wolfsbane, and in Ireland blue rocket, yields us aconite. Digitalis is obtained from the foxglove, whose long stately racemes of purple-coloured flowers are such familiar objects to many of us. The leaves of the thorn-apple or stramonium, when smoked in the form of cigarettes, have relieved the paroxysms of many a long-suffering asthmatic; and the colchicum or meadow saffron has earned the gratitude of many a sufferer from gout.

It is probable that every country spontaneously affords remedies for those diseases from which the inhabitants most frequently suffer, and that in the course of time many of our exotic drugs will be superseded by others which are growing, so to speak, under our very noses. It is now well known that our native willow yields us a product which, in the treatment of ague, is nearly equal in energy to the world-renowned quinine, and that, moreover, this tree flourishes vigorously in damp,

low-lying places, exactly where those diseases in the treatment of which it has proved beneficial are most common. Our marshes are overrun with different kinds of iris or flag, many of which should be valuable agents in the treatment of disease. A powerful emetic is yielded by a common species of buttercup, and the lilac, which, although not strictly a native, is found in every garden, gives us an extract which, were its properties investigated, would probably replace many an expensive product of foreign soil. There are few places in England where plants having valuable medicinal properties cannot be found, often growing wild and uncared for, and frequently on waste lands where nothing else could be cultivated.

All parts of plants cannot be used indiscriminately as remedial agents. It often happens that the active principle is confined to one portion of a tree or shrub, the other part being absolutely or comparatively innocuous. A good example of this peculiarity is afforded by the Calabar bean or "chop-nut" of Western Africa, which for ages has been employed by the natives as a judicial test or state poison for the detection and punishment of the crime of witchcraft. The kernels of the bean contain a powerful poison, whilst the remainder of the plant, which in its general characters resembles our scarlet-runner, is absolutely inert, and may be eaten with impunity. We seldom find it advantageous in the preparation of our different medicinal infusions and tinctures to use the whole plant. Sometimes we employ only the root, as in the case of ipecacuanha and gentian. Sometimes the leaves only are used, as in foxglove, monkshood, and senna. Occasionally we resort to the use of the wood—for example, the quassia wood, which is made into the little drinking vessels sold under the name of "bitter cups." In the case of *nux vomica* the active principle is yielded only by the tough horny seeds contained in the fruit, even the pulp in which they are imbedded being destitute of active properties.

Some of our most useful drugs have been valued for their medicinal properties for many, many centuries. Carbon, in the form of wood charcoal, must have been familiar to man from the most remote period of antiquity, and was probably known to the earliest inhabitants of the globe. Sulphur or brimstone was known in the time of Moses, and is mentioned in Genesis. The linseed or flax has been cultivated from the remotest ages, and its medical application, both externally and internally, was well known in the time of Pliny. Many drugs now in daily use are mentioned by name or described in the Bible. For example, it is usually supposed that the "wild vine" referred to in the Old Testament (2 Kings iv. 39) was the plant which is known to us as *colocynth*. Its active purgative properties would fully justify the exclamation of the partakers of the pottage—"There is death in the pot!"

The spotted hemlock was the state poison of ancient Athens, and was used as the instrument of Socrates' death—a circumstance which conferred a distinction on the plant which time can never efface. Other drugs cannot boast of such antiquity. Foxglove was apparently unknown till about the time of the Norman Conquest, although it seems strange that the ancients should have overlooked the valuable properties of a plant which is equally remarkable for its stately growth, its elegant flowers, and its powerful effects on the animal economy. The broom was used in ancient Anglo-Saxon medicine, and under the name of *planta genista* has not failed

to leave its mark on English history. Many valuable medicines, such as chloroform, the alkaloid quinine, and the now popular chloral, are productions of the present century. Almost every scientific discovery places in our hands new modes of treatment, and new methods of cure, some to supersede old remedies, some to be used for a time and then cast aside in favour of a more fortunate rival. Recent discoveries in electricity have put us in possession of a powerful agent which is destined to occupy a prominent and a permanent place in our list of remedies. The battery and galvanic current have already proved an inestimable boon to many a helpless paralytic.

Many drugs, such as rhubarb, senna, and quassia, require little or no preparation, for we have only to make an infusion, and they are ready for use. Others, such as morphia, chloral, and quinine, necessitate long and complicated chemical processes for their production. As a rule, only those drugs which are of vegetable origin are suitable for home preparation. Before collecting plants for medicinal use, it is necessary to acquire some knowledge of their botanical characters. The substitution of monkshood for horseradish root, for example, would be attended with disastrous consequences. A few hints may be given as to the time of gathering the plants, although this is a subject on which the collector's powers of observation and common sense will stand him in best need. In the first place, the leaves or other parts of the plant should be dry; no one would think of collecting them if wet with rain or dew. They should, if possible, be obtained annually, and not kept indefinitely from year to year. Herbs and leaves should be gathered after the flowers have bloomed, and before the seeds are matured. Roots should be dug up in autumn, after the old leaves and stalks have fallen, and before the appearance of the new ones. Barks are advantageously procured in the spring, that being the season in which they are most easily separated from the wood. The plants when collected should be spread out on trays or shallow wicker baskets, and exposed to a gentle heat with a current of air, so that the moisture may be driven off, and they may dry. Finally, the most delicate parts, such as the leaves and flowers, should be placed in corked or stoppered bottles, and the remainder of the plant should be preserved in such a manner as to ensure its freedom from contamination by dirt or damp.

We must now refer briefly to the mode of preparation of the different infusions and decoctions. Infusions are as a rule prepared by pouring boiling water over the drug, the time of infusing varying according to the solubility of the active ingredients—for example, if we wish to make an infusion of chamomile, or, in other words, chamomile tea, we take an ounce of the flowers and pour on them a pint of boiling water, and after letting it stand for a quarter of an hour, we strain it, when it is ready for use. In a similar manner we can prepare an infusion of fox-glove, by steeping a drachm of the dried leaves in boiling water for an hour. There is no mystery in the process, the whole proceeding being every bit as simple as making tea. Some infusions contain more than one ingredient, and are then said to be compound—for example; the compound infusion of orange-peel is made by infusing together orange-peel, lemon-peel, and cloves.

Decoctions are made by boiling the drug in water, a process which is admissible only in the case of medicines whose properties are not destroyed by so high a

temperature. To prepare a decoction of dandelion, for instance, we take an ounce of the sliced and bruised root, and boil it for ten minutes with a pint of water, and then strain it, adding at the same time a little more water to replace that which has been lost by evaporation.

Infusions and decoctions must be prepared fresh, as they soon decompose on being exposed to light or air.

Tinctures have the great advantage over watery solutions that they may be kept for an indefinite time without materially deteriorating, the spirit with which they are made serving to preserve them. They are most advantageously prepared on a large scale, the process involving a considerable expenditure both of time and trouble.

Just as we use both simple and compound decoctions and infusions, so we in the treatment of disease sometimes use drugs singly and sometimes combine together a number of them so as to constitute what we call a mixture. The activity of a drug is often greatly increased by giving, in combination with it, another drug having a similar action. Our ordinary "black draught" contains both senna and Epsom salts, and there can be but little doubt that the mixture acts more quickly and energetically, and causes less inconvenience, than would the same doses of the medicines given separately. At the same time it must be acknowledged that the practice of mixing together a large number of drugs is often carried to excess. In an old, and at one time very popular, remedy, known as *Venice treacle*, there were as many as sixty-five ingredients—enough to stock a chemist's shop. We can hardly suppose that each one of these sixty-five drugs produced a separate and distinct action upon the system. Now-a-days we seldom give more than two or three active drugs in our medicines, finding by experience that, to say the least, the patient's chances of recovery are not in proportion to the number of drugs he takes. Our mixtures usually contain flavouring agents, such as peppermint, or cinnamon, or syrup of oranges or lemons, which are used to disguise the taste of the other and more disagreeable ingredients. The mixture would be just as efficacious, though less palatable, without them. When the medicine consists of only a single drug mixed with water the taste is usually so slight that we need resort to no artificial means to disguise it.

It is obviously a matter of great importance that preparations of drugs should always be made in exactly the same way, and of a uniform and constant strength, for if such were not the case endless confusion would arise respecting the dose, and the quantities which should be administered in different diseases. To facilitate this object a work known as the "British Pharmacopœia" is published, containing a list of medicines and their compounds, with the manner in which they are prepared. This work describes in detail the method of making the different infusions, tinctures, &c., and is extremely useful in affording those engaged in the preparation of medicines a uniform standard by which they can ascertain the composition of those substances. Medicines, and their preparations, which are mentioned in the "Pharmacopœia" are said to be "officinal," all others being "unofficinal." The majority of drugs in common use are "officinal," but there are many possessing valuable properties which are not in the list of the "Pharmacopœia." We are of course in no

way restricted to the use of the officinal drugs. A medical man would no more hesitate to use a drug because it was not mentioned in the "Pharmacopœia," than he would refuse to visit a patient because his name did not happen to be in the "Blue Book" or "Court Guide."

We have already referred so frequently to the benefits resulting from the administration of drugs that it may appear almost superfluous to consider in detail a question which is often asked us, "Do we believe in medicines?" All we can say is that we believe as firmly in the beneficial effects resulting from a judicious administration of drugs as we do in the stability of the earth itself. The one rests upon as sure a foundation as the other. Unfortunately there is a good deal of scepticism respecting the action of drugs. There are few people, we trust, who would seriously maintain that medicines are absolutely powerless. A few doses of castor oil would probably demonstrate the futility of their arguments. It must be remembered that there are drugs so powerful, and poisons so subtle, that a single particle, hardly distinguishable by the naked eye, would, when introduced into the system, produce such effects as to endanger a strong man's life. For examples of the curative powers of medicines we need not seek far. The power of sulphur over the itch, the influence of bark or quinine on ague, and the almost instantaneous relief of pain by opium or morphia, are instances sufficiently familiar to any one of us who has much experience of sickness and suffering. When we cannot cure we may often relieve. The indescribable agony of that terrible disease known as *angina pectoris*, or "breast pang," may usually be rapidly assuaged by the inhalation of a few whiffs of nitrite of amyl. Fits, when treated by a perfectly harmless salt, bromide of potassium, gradually become less frequent, and less severe, until the sufferer is often enabled to return to the active duties of this life, and is to all intents and purposes cured. These are justly regarded as triumphs of medicine, and are ranked amongst her proudest achievements. Other examples of successful treatment are afforded by the benefit experienced from the administration of aconite in quinsy, of quinine or phosphorus in neuralgia, and ipecacuanha in winter cough and some forms of vomiting.

Medicines may be classified, or collected into groups, according to the action which they excite upon the system, and certain terms are applied to these drugs to express the nature of this influence.

Thus, *laxatives* are drugs which act moderately in relieving the bowels. Examples familiar to all of us are afforded by figs, prunes, tamarinds, sulphur, and castor oil.

Purgatives are drugs which, in effecting the same object, act more energetically. Aloes, jalap, rhubarb, and senna belong to this group. Macbeth, it will be remembered, refers to the last two as purgatives, curiously enough in the very passage in which he says, "Throw physic to the dogs, I'll none of it."

Emetics are drugs which are employed for relieving the stomach of its contents by exciting vomiting. They are of inestimable value in cases of poisoning, and have saved many and many a life by expelling the deleterious substance before it has been absorbed and has had time to exert its baneful influence on the system. Mustard and salt-and-water are most frequently used for this purpose, for they are

always at hand in cases of emergency. When a choice is afforded in the matter ipecacuanha wine and white vitriol (sulphate of zinc) are, perhaps, preferable, but, at the same time, we have no intention of speaking disrespectfully of our household remedies, which have so often done good service.

Bitters are drugs which, by acting upon the stomach, improve the appetite and aid the powers of digestion. Gentian, calumba, and quassia are used for this purpose, as are also hops, taken either as a medicine or in the more agreeable form of bitter beer.

Tonics are drugs which brace up and give increased tone to the system. The best known and the most frequently employed are the different preparations of iron, bark, and quinine; but there are many others of which we shall speak subsequently.

Expectorants are medicines, such as carbonate of ammonia, squills, ipecacuanha, and tar, which loosen the phlegm and ease the chest in cases of bronchitis and coughs.

Narcotics or opiates are remedies which induce sleep, many of them having at the same time the power of relieving pain. The most prominent member of this group is, of course, opium, which has been called the "gift of God" to man, a title which, though poetical, is in the truest and highest sense of the word equally applicable to every plant that grows. Chloral must be reckoned among the narcotics, whilst lettuce and hops have long been known to possess sleep-producing powers. The custom of eating lettuce at bed-time and sleeping on a pillow of hops, for the purpose of obtaining a sound night's rest, is an old one, and one extensively resorted to in many parts of the country.

Then, again, we have drugs whose energies are wholly devoted to one object, which are seldom used except for the accomplishment of this object. For example, we have medicines which have the power of destroying and expelling worms and other parasites which sometimes find their way into and develop within our bodies. The oil of male fern, the pomegranate root, and santonica, a plant closely resembling and allied to common wormwood, belong to this class. There are other groups of drugs to which we shall refer as we have occasion to use them.

There are many circumstances which modify the action of drugs upon the system. Foremost amongst these is the influence of habit. Habitual toppers, as every one knows, are enabled to drink immense quantities of alcohol, in the form of wine, beer, and spirits, without exhibiting any of the ordinary appearances of intoxication. A man who is accustomed to the use of the "weed" will smoke without the production of any unpleasant consequences a number of cigars or pipes which would quickly reduce a novice in the art to a state of prostration. The effects of habit in diminishing the powers of opium on the system are truly wonderful, a confirmed opium eater taking at a single dose, for the sake of its exhilarating influence, a quantity which would quickly prove fatal to a dozen ordinary people. Another example is afforded by the arsenic eaters of Styria. In that country there prevails amongst the peasants an extraordinary custom of eating arsenic, which is consumed by the men to improve the breathing and enable them to perform feats of strength, and by the women to give plumpness to the figure and beauty and freshness to the complexion. The quantity of arsenic taken by those beginning the

practice is very small, but the dose is gradually and cautiously increased until the patient becomes accustomed to it. It is probable that if the attempt were made in this country, death would ensue before the requisite tolerance could be established.

In many long-standing diseases which are kept in check by treatment it is found advantageous to occasionally abstain from taking the medicine. Many people suffering from fits derive considerable benefit from bromide of potassium, but after a certain time it is often found that the drug, by constant repetition, loses its effect. If now it be discontinued for a day or two and then resumed, its original power over the disease will be regained, and the patient will once more be in possession of a remedy for his complaint. Many people who habitually take medicine find it advantageous to abstain from so doing on one day in the week—to have a day of rest in this respect as in others.

In connection with the subject of habit we may refer to certain peculiarities occasionally noticed with respect to the action of medicines. Every one must have met with people who, whilst able to digest beef and mutton easily, cannot eat even a morsel of the most tender chicken without suffering from indigestion. Just as there are people who are “upset” by chicken or eggs, or other ordinary article of diet, so there are people to whom the administration of the smallest dose of certain medicines would be followed by a general derangement of the system. Most of us could take four or five grains of a salt known as iodide of potassium without feeling any effects from it, but yet there are people in whom the very minutest dose would in the course of a few minutes give rise to all the symptoms of a very bad cold in the head. In some people the dust arising from ipecacuanha root, or even the smell of the drug, will bring on a severe asthmatic attack, whilst in others a similar effect is produced by the odour of roses, pinks, the privet, or even of a cat or dog.

We have already seen that drugs differ greatly in their activity; and from this it follows that some medicines must be given in smaller doses than others. No one requiring a purgative would think of taking the same dose of calomel as he would of Epsom salts. Many drugs which, in smaller or moderate doses, would act beneficially, would in large doses prove to be poisonous. In fact, startling as it might at first sight appear, there is no real difference between a poison and a medicine; for a substance which in a large dose is a deadly poison, may be—and usually is—in a small dose a most valuable remedy; and on the other hand, as we have already seen, a medicine given in too large a quantity or too frequently may cause symptoms of poisoning. For example, if we took thirty grains of arsenic it would in all probability speedily prove fatal; but if we took the thirtieth part of a grain of the same substance we might, if suffering from certain diseases in which it is useful, derive considerable benefit from it. A large number of our most powerful and energetic poisons—such as monkshood, foxglove, and strychnia—have been pressed into the service of the healing art, and are ranked amongst our most valuable medicines. No general rules can be laid down respecting the doses of medicines, but a reference to the list of prescriptions will solve any difficulties which may be experienced on this point.

It must always be remembered that children require smaller doses of medicines than adults—the younger the patient, the smaller the dose. It should also be

borne in mind that some medicines—especially opium and its preparations, laudanum, paregoric, &c.—act very deleteriously on children, and often prove fatal in extremely small quantities. There can be no doubt that hundreds and hundreds of children are killed annually by patent medicines containing opium and other narcotics. On the other hand, calomel, grey powder, and other preparations of mercury, are usually well borne by young people.

It is difficult to lay down any absolute rule for determining the relative doses to be given at different ages. As a rule, the dose should be increased in quantity from birth to the prime of life; it reaches its maximum about fifty, and then gradually declines as age advances. The following table may prove of assistance in determining the dose to be administered:—

Taking the dose for an adult as unity,

A patient under 1 year of age would require from $\frac{1}{12}$ to $\frac{1}{12}$ of this dose.

„	2 years	„	$\frac{1}{8}$
„	3 „	„	$\frac{1}{6}$
„	4 „	„	$\frac{1}{4}$
„	7 „	„	$\frac{1}{3}$
„	14 „	„	$\frac{1}{4}$
„	20 „	„	$\frac{2}{3}$
„	from 20 to 50	„	the full dose, or 1.

It is not worth while trying to remember these figures, for there is a very simple rule by which the proportion may be found with sufficient exactness for all practical purposes. For children under twelve, the adult doses of most medicines must be administered in the proportion of the age to the age increased by twelve; or, in other words, divide the child's age by the same number, plus twelve, and the required proportion will be obtained. For example, what proportion of the full dose must be given to a child four years old?

Child's age 4
Add 12 to child's age . 16—proportion $\frac{1}{4}$.

The adult dose of bromide of potassium is about sixteen grains, and consequently we should give a child four years old only a quarter of this, or four grains.

We must now speak of the different methods of measuring medicines. Formerly the apothecaries' or troy weight was exclusively used in pharmacy, and the ounce contained 480 grains. Now the avoirdupois weight is used.

WEIGHTS.

1 grain, gr.	. . . . .	= 1 grain.
1 ounce, oz. or \mathfrak{zj}.	. . . . .	= 480 grains.
1 pound, lb.	. . . . .	= 16 ounces = 7,000 grains.

It will be seen that there is no intermediate weight between a grain and an ounce. Nevertheless, when the term drachm (\mathfrak{zj} .) and scruple (\mathfrak{ss} .) are used in prescribing solid drugs, the former is to be regarded as equivalent to sixty grains, and the latter to twenty grains. Our weights and measures, it must be admitted, are somewhat complicated.

The fluid measures are as follows:—

1 minim, m̄j.	. . . . .	= 1 minim.
1 fluid drachm, ʒj.	. . . . .	= 60 minims.
1 fluid ounce, ʒj.	. . . . .	= 8 fluid drachms.
1 pint, Oj.	. . . . .	= 20 fluid ounces.
1 gallon, Cj.	. . . . .	= 8 pints.

All fluids are measured, and never weighed. It is hardly necessary to say that in prescriptions it is seldom requisite to use the weights or measures above an ounce.

For weighing solids a little pair of scales should be procured and reserved exclusively for medicines. It matters very little about their form so long as they are trustworthy. They should be kept clean, and on no account be allowed to get rusty. The dots on the small weights indicate the number of grains which they represent, whilst the symbols ʒj., ʒj., and ʒj., mean respectively, an ounce, drachm (60 grains), and scruple (20 grains). The symbols ʒss, ʒss, mean half an ounce and half a drachm. The double s is a contraction of *semi*, a half.

For the measurement of fluids we use two glass graduated vessels, one for small doses and the other for large, the former known as a minim measure and the latter as an ounce measure. They may be obtained from a chemist for about eighteen-pence. The minim is approximately equal to a drop, but drops vary very much in size, according to the shape of the glass or bottle from which they are poured.

When the graduated glasses are not at hand we must have recourse to our ordinary domestic measures.

A tea-spoonful	is approximately equal to	1 fluid drachm.
A dessert-spoonful	„ „	2 „ „
A table-spoonful	„ „	4 „ „
A wine-glassful	„ „	from 1½ to 2 fluid ounces.
A tea-cupful	„ „	5 „ „
A breakfast-cupful	„ „	8 „ „
A tumblerful	„ „	from 10 to 12 „ „

There is a growing tendency on the part of the silversmiths to increase the size of our spoons. Some of our modern tea-spoons, for instance, hold nearly two drachms.

There are several different ways in which medicines may be administered. The most usual method is, of course, to swallow it, and introduce it into the system through the medium of the stomach. Sometimes, however, medicines cannot be retained, and are rejected by vomiting almost as soon as they are taken. In such cases the medicine is often administered by the bowel, in the form of an enema, or injection. Again, the medicine may be made into an ointment, and rubbed into the body through the medium of the skin. Occasionally the nozzle of a very small and delicate syringe, called a hypodermic syringe, is pushed under the skin of the arm or leg, and the medicine is then injected. These hypodermic or subcutaneous injections cause hardly any pain, and afford in many cases a very convenient mode of giving a remedy. The drug acts very quickly, the stomach is not upset, and by this means, moreover, a medicine can be given when a person is insensible or too ill to swallow. Hypodermic injections of morphia are frequently given for the

relief of pain, but they should never be resorted to unless under the advice and direction of a medical man. There are other methods of using medicines, as in the form of inhalations, or smoked as cigarettes ; but we shall refer to these as we have occasion to prescribe them.

We will now proceed to speak of the medicine chest. The form which one adopts is a matter of the most perfect indifference. For our own part we do not see the necessity for a medicine chest at all, unless, perhaps, when one is travelling. The drugs may very well be allowed to stand on the shelf of a cupboard, or may be kept in any little cabinet, always, of course, under lock and key, and no one but a responsible person should have access to them. They should be kept dry, and should not be placed near any powerfully-smelling substance. Drugs are delicate things, and have to be treated with a certain amount of care. Of course the bottles must never be left uncorked, or the contents will speedily spoil. In dispensing medicines, when too much is poured out, it is safer to throw away the excess, and not to return it to the bottle. Every effort must be made to ensure freedom from admixture and contamination.

What drugs should one get to begin with? It is impossible to lay down any very definite rules upon this point. It will depend a good deal upon your knowledge, upon your distance from medical aid, and more particularly upon the probable nature of your cases. If you have ever used any particular drug, or seen it used, with success, get it by all means, and begin with that. Do not get more drugs than you want ; but when you do get a medicine, make yourself thoroughly acquainted with its action and mode of administration. The following are all very useful drugs, and you cannot go far wrong if you begin with them.

Sulphate of Zinc.	Tincture of Iron.
Gallic Acid.	Tincture of Quinine.
Compound Rhubarb Pills.	Tincture of Aconite.
Sal Volatile.	Tincture of Belladonna.
Essence of Camphor.	Tincture of Opium (Laudanum).
Bromide of Potassium.	Ipecacuanha Wine.

In sulphate of zinc and ipecacuanha you have emetics ; gallic acid is astringent, and stops bleeding ; sal volatile is useful in fainting, essence of camphor in choleraic diarrhoea, bromide of potassium in fits ; quinine is a tonic ; iron cures anæmia, or bloodlessness ; aconite subdues inflammation ; and opium allays pain of all kinds. These drugs, with the exception of the essence of camphor, are officinal, and can be obtained from any chemist by simply giving the name. Should the essence of camphor not be kept in stock it will be sufficient to ask for Rubini's camphor, or to say that it is a saturated solution of camphor in rectified spirit.

It is of no use laying in a big stock of drugs ; a couple of ounces of each of the liquids will last you a long time, except, perhaps, the tincture of quinine, of which you had better get a larger quantity. And what will they cost ? Very little ; for a few shillings you can get enough drugs to doctor a whole village, or to last you your lifetime. The quinine is the only one which is at all expensive. You should see that your bottles are all distinctly labelled, and the camphor, belladonna, aconite, and opium had better have in addition another label indicating

that they are "poison." Of course, in small doses they may be given with perfect safety, but it is better to indicate that they cannot be taken *ad libitum*. As in cases of poisoning the sulphate of zinc is usually required without a moment's delay, it is better to weigh out an emetic dose (gr. xx.), and keep it wrapped in the form of a powder in case of emergency.

ACIDS.

There are several substances used in medicine for the sake of their sour or acid properties. Foremost amongst these are sulphuric acid (oil of vitriol), nitric acid (*aqua fortis*), and hydrochloric, or muriatic, acid (spirit of salt), all of which, though in a concentrated state powerful poisons, form, when largely diluted with water, valuable remedial agents. In the same category may be placed acetic, citric, and tartaric acids. Acidulated drinks are very acceptable to patients suffering from fever, and may be advantageously given to moisten the dry and parched mouth, and quench the intolerable thirst. A pleasant beverage may be made by boiling a couple of ounces of powdered cascarilla bark in a pint of water, and when cold adding twenty or thirty drops of either dilute nitric or hydrochloric acid. The degree of acidity may be regulated according to the taste of the patient, but the quantity we have indicated is generally sufficient.

Hydrochloric acid is one of the constituents of gastric juice, and is often employed to assist digestion when there is a defective secretion of that fluid. Habitual sufferers from *dyspepsia* may obtain benefit from the gentian and acid mixture (Pr. 15).

In ordinary cases of indigestion, the mixture should always be taken from ten minutes to a quarter of an hour *after* food, but if the complaint be accompanied by *waterbrash*, i.e., by the regurgitation of a sour-tasting fluid into the mouth, the medicine must be given the same time *before* meals. Attention to this point is of importance, for in cases of acidity of the stomach, taking an acid mixture after the meal would be but adding fuel to the flame. whilst the use of the same medicine before food would prove beneficial by arresting the secretion of the acid.

Vinegar is sometimes taken surreptitiously in large quantities for the purpose of reducing obesity. It may possibly reduce the stoutness, but it will do so at the expense of serious injury to the health, and the practice is one which cannot be too strongly condemned.

All our acids are astringent, as shown by the roughness produced in the mouth after swallowing any of the acid mixtures. A practical application of this property is afforded by the use of sulphuric and other acids in the treatment of diarrhœa.

Choleraic Diarrhœa, so prevalent in London in summer, is treated advantageously with sulphuric acid in combination with laudanum and chloric ether (Pr. 28). The dilute sulphuric acid, which forms one of the constituents of this mixture, is made by cautiously adding one part of sulphuric acid to twelve parts of water.

Two table-spoonfuls should be taken every four hours until relief is obtained. A more elegant mixture may be made by adding rather less acid, and substituting acid infusion of roses for water. As this mixture contains laudanum, or tincture of opium, it must not be given to children. It is used in nearly all the London hospitals, hundreds of gallons being given away annually for the relief of diarrhœa. In many manufactories and large business houses, it is customary during the summer months, and particularly at times when English cholera is prevalent, to place a bottle of this "diarrhœa medicine" in some convenient place to which the employés can have constant access. The practice is undoubtedly a good one, and does much to reduce the mortality from summer diarrhœa. The diarrhœa mixture is becoming with us quite an institution.

Acids by reason of their astringent action are useful *in bleeding from the stomach and lungs*, or other parts of the body. A dose of any dilute acid or acid mixture may be used for this purpose.

The profuse *night sweating* so frequently an accompaniment of that dire disease, consumption, may often be mitigated by sponging the body with any dilute acid solution, such as aromatic vinegar. The great objection to this practice is that it necessitates exposure of the patient, who thereby runs a certain risk of catching cold, with its attendant dangers.

Citric acid is a crystalline body prepared from lemon-juice, or from the juice of the fruit of the lime. It is contained in grapes, tamarinds, gooseberries, red currants, and many other fruits. A solution prepared by dissolving thirty-four grains in two table-spoonfuls of water, closely resembles lemon-juice, and becomes mouldy on keeping. It enters with bicarbonate of potash into the formation of many of the purgative effervescing medicines now so commonly sold under different fancy titles. An effervescing mixture may be made by mixing in water fifteen grains of citric acid, or two and a half tea-spoonfuls of fresh lemon-juice, with twenty-nine grains of bicarbonate of potash.

ACONITE.

This drug, one of our most active vegetable poisons, is yielded by the common monk's-hood, wolf's-bane, or blue rocket, the *Aconitum napellus* of the botanists. The plant grows wild in many parts of Europe, and is in this country so generally cultivated for ornamental purposes, that it is to be met with in almost every cottager's garden. It is familiar enough to every one resident in the country—at all events, by sight if not by name. It usually attains a height of from two to three feet, and its simple unbranched stem is covered with leaves, which are divided into five wedge-shape pieces, and are dark green on the upper surface, but paler below. The flowers which blow in May or June are of a beautiful blue or violet colour, and at the extremity of the stem are arranged in a long cylindrical spike. There are several varieties of monk's-hood, but those with blue flowers are alone used in medicine.

Its deleterious effects were well known to the ancients, who regarded it as the most virulent of all poisons, and attributed its origin to Hecate, who, they declared, caused it to spring from the foam of the many-headed dog, Cerberus. Aconite is

said to have been the principal ingredient in the poisonous cups mixed by Medea for Theseus, which Ægeus, his own father, was to have administered. It was the poison employed in the island of Ceos to execute the barbarous law which condemned to death all who were no longer useful to the State, or were too feeble to defend themselves. Descending to more modern times, it will be remembered by those interested in the annals of crime that tincture of aconite was the agent employed by Dr. Pritchard for the murder of his wife and mother-in-law, at Glasgow, in 1865.

All parts of the plant are poisonous, but the root is especially noxious, and when the leaves have fallen it appears to possess its greatest virulence. On chewing a very small portion, of either the root or leaves, a sensation of numbness will, after a few minutes, be experienced in the lips and tongue, and will continue for some hours.



Fig. 1.—ACONITE ROOT, LEAF, AND FLOWER.

Poisoning by the root of aconite is, unfortunately, by no means unfrequent. It has been eaten, on several occasions, in mistake for horse-radish root, and death has usually ensued. Only a few months ago several people died from eating aconite with their roast beef instead of the ordinary horse-radish. In one instance the unfortunate victim stated before his death that he was confident that the quantity he had taken was not greater than would go on the point of a table-knife. The characters presented by the two roots, aconite and horse-radish, are so essentially different that there should be no difficulty in distinguishing between them. It is probable, however, that most of the accidents have occurred more from want of thought than from want of knowledge. The following table will show at a glance the essential differential characters of the two plants :—

TO DISTINGUISH ACONITE ROOT FROM HORSE-RADISH.

ACONITE.

1. *Shape*.—Conical, tapers rapidly to a point, and gives off a number of fine fibres.
2. *Colour*.—Coffee coloured or brown on the outside.
3. *Smell*.—Earthy.
4. *Taste*.—At first bitter, but afterwards producing tingling or numbness.

HORSE-RADISH.

1. *Shape*.—Slightly conical at the crown, then cylindrical, or nearly so, and almost of the same thickness for many inches.
2. *Colour*.—White, or with a yellowish tinge, on the outside.
3. *Smell*.—Pungent and irritating, especially on scraping.
4. *Taste*.—May be bitter or sweet, but is very pungent.

The symptoms produced by eating aconite root are very striking. In one case where a small portion was eaten with the beef at dinner, they made their appearance in about three-quarters of an hour. The man first complained of burning and numbness of the lips, mouth, and throat, which soon extended to the stomach, and apparently

caused violent and constant vomiting. The limbs were cold, but the chest warm, and the head was covered with perspiration. The mental faculties were not disturbed, and the patient complained of violent pain in the head, and trembled all over. Though exceedingly weak, there was never at any time paralysis. In spite of all treatment death ensued in about four hours from the meal.

The preparation of aconite most commonly used is the tincture, an over-dose of which produces symptoms similar to those already described. What is known as Flemming's Tincture of Aconite is a very powerful preparation, and as it is as deadly in its operation as prussic acid, it should never be used except by a medical man. In 1852 an excise officer lost his life by merely tasting it, under the supposition that it was flavoured spirit. He was able to walk from the Custom House over London Bridge, but died in about four hours after taking the poison.

What to do in poisoning from Aconite, or Monk's-hood.—1. Send for a doctor. 2. Give the emetic draught (Pr. 27), or a tea-spoonful of mustard in a little hot water, and do all you possibly can to induce vomiting. 3. Give brandy and sal volatile. 4. Keep the patient warm.

There are few drugs in our materia medica of more value than aconite. On it we place implicit reliance in the treatment of nearly all complaints accompanied by a feverish condition. In what we call acute diseases it is simply invaluable.

In the first place, we will speak of it as an external application. In *tic* or *neuralgia* of the brow or face it often proves of the greatest use, relieving the distressing pain either permanently or, at all events, temporarily. As the relief afforded by aconite is usually speedy, it should always be tried at once, so that if it should prove unsuccessful, recourse may be had without delay to some other mode of treatment. It should be used in the form of the neuralgia liniment (Pr. 86).

If applied to the painful part it will, after an interval, produce numbness and tingling of the skin. Care should be taken not to rub the application into wounds or cracks in the skin, and not to allow it to run into the eyes or mouth.

The application of this liniment is of great service in *sick headache*, particularly when the attack is accompanied or followed by tenderness in the painful region. Not only is the pain eased, but the distressing sickness is usually relieved.

A liquid sold as an external application, under the name "*neuraline*," has been analysed, and is said to consist of tincture of aconite mixed with chloroform and rose-water. It has been found to contain about a drop and a half of Flemming's tincture of aconite in each bottle. Considerable caution should be employed in using a preparation of this kind. It is unwise to use patent medicines in any form unless their composition is distinctly stated on the bottle.

We must now consider the uses of aconite when administered internally. Of course, when we deal with powerful medicines such as this, we give only small doses, but administer them frequently. Pr. 38 contains a drop of the tincture in each tea-spoonful, and may be used with perfect safety.

The dose of this is, for an adult a tea-spoonful, and for a child, one-third of that

quantity. It must be given every ten minutes for the first hour, and subsequently hourly. The tincture of aconite here referred to is that of the British Pharmacopœia, which is of the strength of two and a half ounces to the pint. The mixture will not keep longer than a day or two.

Aconite is highly esteemed for its power, which is almost marvellous, of controlling *inflammation* and cutting short the accompanying fever. It is in the early stage of inflammation that it is so conspicuously serviceable. The medicine should be given as soon as possible, every hour lost being of value. For this reason tincture of aconite should always be kept in the house, of course under lock and key. There is necessarily a certain amount of delay involved in having to send to a chemist, and that delay may make all the difference between success and failure.

The efficacy of the drug depends largely on the mode in which it is employed. For the first hour or two half a tea-spoonful of the mixture is to be given every ten minutes or a quarter of an hour, and after that a tea-spoonful is to be given every two hours. For children or even with adults in whom there is much prostration, smaller doses should be given. It is advisable to give the medicine on an empty stomach, so that it may be the more readily absorbed. It should always be given alone, and never mixed with any other drug.

In *quinsy* or *tonsillitis* aconite should always be employed, and in the manner we have indicated. If commenced in the earliest stage, when the chill is still on the patient, the dry, hot, and burning skin becomes in a few hours comfortably moist, and in a little while later is usually covered with perspiration. With the moistening of the skin comes speedy relief from many of the accompanying distressing symptoms, such as restlessness, chilliness, and pains and stiffness in the limbs, and at the same time the pulse is reduced in frequency, and the fever subsides. If you can catch a quinsy or sore throat just at the very beginning you can nearly always cut it short by aconite in from twenty-four to forty-eight hours. When you are afraid that you are going to have one of your bad sore throats get out your aconite bottle, for it is your only chance of arresting its progress.

Aconite is equally serviceable in "*a bad cold all over*," when there is chilliness, aching of the limbs, a hot dry skin, and quick pulse.

In the more severe forms of inflammation, such as *pleurisy* and *inflammation of the lungs*, the effects of this valuable drug, though not so rapid, are equally manifest.

It is not to be supposed that aconite has the power of curing such diseases as *scarlet fever* and *measles*, but it nevertheless exerts a beneficial influence in these complaints, by inducing free perspiration, soothing the nervous system, and procuring sleep. Moreover, it has the power of subduing the inflammatory affections which often accompany these complaints, and by their intensity endanger life. It will moderate the severity of the sore throat in scarlet fever, and of the bronchitis in measles.

Aconite often does good in *rheumatic fever*. Sometimes, though not always, it shortens the duration of the disease. It is often of service in subduing the swelling and pain of the inflamed joints. (See SALICINE.)

In a sharp attack of *gout* a similar mode of treatment is useful.

Again, aconite is of marked service in *erysipelas*. When given at the very commencement it often at once cuts short the attack, and even when the result is less fortunate it will reduce the swelling and hardness, lessen the redness, and prevent the inflammation from spreading.

Frequently in children, and occasionally in adults, the arm, some days after *vaccination* has been performed, becomes hot, red, tender, and swollen. The inflammation may continue for weeks, and may run down the arm, and even involve a portion of the chest. This condition is usually quickly arrested by the aconite mixture, and even when it persists the redness is rendered less intense, and the swelling less hard and painful.

In fine, aconite should be administered in the manner we have indicated in all cases in which the patient is feverish.

ALKALIES.

Alkalies are substances which, in their chemical properties, are diametrically opposed to acids. In this group we shall have to consider several salts which are in common use as medicines. Carbonate of potassium and bicarbonate of potassium, and the corresponding compounds of soda, are more or less familiar to us all.

Carbonate of potassium, or salts of tartar, as it used to be called, was known in the earliest times, and was prepared from the ashes of vine twigs. The Arabs are generally supposed to have been the first to make this salt, but it is probable that the idea, if not the custom, was borrowed by them from the Hindoos. From whom the Hindoos derived their information we are not prepared to say. Nowadays potash, in an impure form, is made by burning plants, in countries such as North America, Russia, Sweden, and Poland, where forests are most abundant. The ashes so obtained are treated with water and lime, the resulting solution when evaporated in iron pots constituting what is known as "black salt." This product, when fused and cast into cakes, constitutes the "potashes" of commerce, whilst "pearlash" is made by transferring the "black salt" from the pots to a large oven-shaped furnace, where the flame is allowed to play over it and burn off the black impurities. The carbonate of potash used in medicine is formed by washing pearlash with its own weight of water, pouring off the clear solution, and evaporating it to dryness. It is a white crystalline powder, of a caustic taste, and readily soluble in water, the solution effervescing or sparkling freely on the addition of any acid, such as a spoonful of lemon-juice.

The bicarbonate of potassium contains more carbonic acid in its composition, and is made by passing a stream of carbonic acid gas into a solution of the carbonate.

Potash, or caustic potash, is made by boiling in a clear iron or silver vessel a solution of carbonate of potash with quicklime. When intended for use as a caustic the potash is cast into little pencils or sticks, which are conveniently carried in a caustic case.

Carbonate of sodium, or natron, the common washing soda, is obtained in large quantities from sea-salt. This is first mixed with pounded coal and chalk, and then heated in a reverberatory furnace. The crude mass so obtained is next treated with water, and the solution evaporated until the carbonate of soda crystallises out.

Bicarbonate of sodium is made on a large scale by moistening carbonate of sodium, and exposing it, spread on cloths, to the action of carbonic acid gas.

The alkalis have several valuable therapeutical applications. In many forms of *indigestion* they, like the acids, are of great service. The member of this group most generally resorted to in these cases is the bicarbonate of sodium, which should be taken in fifteen-grain doses. Alkalies given to increase the formation of the gastric fluid, and thereby to promote digestion, must be taken a short time before meals, for if given after food they will neutralise the acid of the gastric juice and effectually retard and impede digestion. When, however, the indigestion takes the form of heartburn and acid eructations, it may be concluded that the troubles are due to an excessive formation of acid, which will be neutralised, and the symptoms removed, by taking the alkali soon after the meal. The gentian and soda mixture (Pr. 14) is a most valuable remedy for indigestion. Two table-spoonfuls should be taken, either before or after meals, in accordance with the directions here given. Wyeth's Soda-Mint or Neutralising Tablets are also useful.

An alkaline lotion (Pr. 90) often proves serviceable in allaying the *itching of nettle-rash* and other skin diseases. It should be applied to the skin several times a day with a small piece of sponge.

ACTEA RACEMOSA.—See CIMICIFUGA, p. 792.

ALUM.

In the preparation of alum, finely divided clay, which has been recently roasted, is mixed with half its weight of oil of vitriol, and heated for three or four days. The alum is then dissolved out of the mass, and, after being freed from iron and other impurities, is ready for use.

It forms transparent, white, regular eight-sided crystals, which, by slowly evaporating a concentrated solution, may be made to attain a large size. A group of octahedral crystals of alum usually forms one of the stock show specimens of the chemist's window. The taste of alum is acid, sweetish, and somewhat astringent. When strongly heated it fuses, and the water of crystallisation being driven off, forms a light, spongy mass; which is known as dried alum.

Alum is a powerful styptic, and as such is commonly employed to stop bleeding. It has this great advantage over other substances used for a similar purpose, that it is always at hand, there being few households in which alum is not to be found. To check the *bleeding from piles, leech bites, or slight cuts*, the part should be first wiped dry, and then dusted over with powdered alum. *Bleeding from the gums* may be checked by dissolving alum in cold water, and then holding it in the mouth until it has had time to exert its astringent action. *Bleeding from the nose* is often quickly arrested by using powdered alum as a snuff. In *bleeding from the stomach or lungs* alum is also useful. In these cases there is usually no time to weigh out or measure the salt. A spoonful may be thrown into a glass of water, and the liquid tossed off as soon as any of the alum has been dissolved.

Another example of the application of the astringent properties of alum is

afforded by its use in *relaxed sore throats*. The alum gargle (Pr. 81) should be used at least three or four times daily.

Dried alum applied several times a day will quickly heal *ulcers of the gums* occurring in children.

Alum has long been highly esteemed as a remedy for *whooping cough*. It is useful only in uncomplicated cases—in cases, that is, in which the patient is not feverish, and in which there is no chest mischief, and no irritation as the result of teething. In cases of this description it rapidly reduces the number and severity of the fits, and in a few days effects a cure. Alum also proves extremely useful in the spasmodic cough that often remains after the disappearance of whooping cough. For children alum should be dissolved in a little water, and given in six-grain doses every three hours, or a smaller dose may be given more frequently. The addition of a little simple syrup to the mixture serves to make it more palatable.

In *ozæna* or “*stink nose*,” irrigating or washing out the nose with a lotion made by dissolving a tea-spoonful of alum in a pint of water often proves extremely useful.

The ordinary dose of alum for an adult is from ten to twenty grains. In larger doses it acts as a purgative. The dried alum is for external use only.

ALOES.

There are several varieties of aloes, of which the most valued are the Barbadoes and Socotrine. The plant yielding Socotrine aloes is a native of the Cape of Good Hope and of the Island of Socotora; but it is now commonly cultivated in the West Indies. It has, when fully grown, a stem three or four feet high, usually terminating in a cluster of leaves, each of which, some foot or more in length, is shaped like a sword, sharply pointed at the apex, and coarsely jagged at the margins. The flowers are red, tipped with green, and are borne in clusters on long stalks, which rise erect from among the leaves. The plant yielding the Barbadoes aloes has yellow flowers, arranged in an elegant loose spike. These plants are very readily cultivated artificially, and being incapable of parting rapidly with water, flourish well in pots filled with lime rubbish mixed with a little ordinary soil. They will thrive in any ordinary greenhouse the temperature of which in winter can be kept constantly at or above 40°. In summer no artificial heat is required, but they must be abundantly supplied with water, although in winter, when not in a state of activity, they do better without any. Specimens are frequently brought to London from the West Indies by sailors, who, for convenience of transport, cut off the top of the stem, tying tightly over it a tarred cloth, to prevent the escape of the juices. If suspended by a cord from the ceiling of a room, these plants, even when so mutilated, will continue to live for years, throwing out after a time a fresh crop of leaves.

There are several processes adopted for preparing the drug, differing, however, only in detail. Usually the leaves are cut off near their bases, and thrown with their severed ends downwards into a tub or bucket, when the juice which they contain rapidly exudes.

When a sufficient quantity has been collected it is allowed to evaporate in the sun until it becomes consistent, when it is poured into the gourds in which it is imported.

Barbadoes aloes as ordinarily met with in the shops occurs in yellowish-brown or dark brown opaque masses, having a bitter nauseous taste, and a strong, heavy, disagreeable odour. The smell of Socotrine aloes is fruity and far less disagreeable.

Aloes is employed chiefly for its purgative properties, its effects being exerted mainly on the lower bowel. It produces bulky motions, a little softened, but not watery. Its action is slow, and six, twelve, or even twenty-four hours may elapse before it operates. There are several forms in which it may be conveniently administered, the compound decoction of aloes—or “baume de vie,” balm of life, as it is sometimes called—being as good as any. It is composed of Socotrine aloes, myrrh, saffron, extract of liquorice, compound tincture of cardamoms, carbonate of potash, and water, and is given in three or four table-spoonful doses. Aloes is well suited for cases of habitual costiveness, for constant use does not lessen its activity, and sometimes even the dose may be gradually decreased. Pr. 64 is a very excellent pill for cases of *chronic constipation*.

The extract of aloes is a constituent of the “dinner pill” (Pr. 65), so frequently taken by people preparatory to over-gorging themselves. An old gentleman is going to a big City dinner, and knowing that he is incapable of resisting the temptation to eat and drink more than is good for him, and that he will assuredly suffer for it the next morning, he takes time by the forelock, and treats his complaint before acquiring it. The pill may even enable him to eat another plate of turtle, or dispose of an extra glass or two of hock or Madeira. Aloes in combination with iron is often used in cases in which the periods have from any cause been suppressed. The “aloes and iron pill” is an officinal preparation.

AMMONIA.—See SAL VOLATILE, p. 879.

ARNICA.

Arnica (*Arnica montana*) is a plant somewhat resembling our common marigold, and growing abundantly in the northern parts of Europe. Its use is almost universal as an external application to *bruises* and *swellings*, resulting from blows, falls, or other forms of mechanical violence. It appears to exert a special or specific influence on the muscles. It is often administered internally in these cases. Many kinds of *muscular pain arising from over-exertion* in those who are unaccustomed to severe or prolonged physical exercise may be relieved by this drug. A common example of this pain is the “stitch in the side,” resulting from prolonged walking or running. Many of these comparatively trivial complaints have a natural tendency to get well, but still in severe cases it will be found advantageous to resort to the use of arnica.

In the preparation of the tincture, sometimes the whole plant is employed, and

sometimes only the root. It is made with rectified spirit, and is of the strength of one part in twenty.

The mixture (Pr. 42) and lotion (Pr. 94) may be employed simultaneously.

ARSENIC.

The substance to which we ordinarily apply the term arsenic, or white arsenic, is in reality a combination of the metal with oxygen, and is known to the chemists as arsenious acid. It is prepared in Cornwall by roasting arsenical iron pyrites. It is a heavy white powder, very slightly soluble in water, or in any of the ordinary beverages. It is almost tasteless, for it has been frequently administered in all descriptions of food in fatal doses without being detected by the victim.

Arsenic, as is well known, is a powerful irritant poison, and on account of its freedom from colour and taste has long been a favourite with both murderers and suicides. It is stated, on good authority, that in India alone hundreds of people die annually from the secret administration of this substance. Fortunately, it is now far less readily procurable in this country than formerly. By the "Arsenic Act" it is provided that no arsenic shall be sold retail without being previously mixed with either soot or indigo, so that its presence in food may be readily detected. The prescriptions of medical men are by a special clause exempted from the restrictions imposed by this extremely salutary act.

The most convenient form in which to administer arsenic for medicinal purposes—and arsenic is largely employed in the treatment of disease—is in the form of the arsenical, or, as it is sometimes called, Fowler's solution. This consists essentially of a solution of arsenious acid in carbonate of potash, coloured and flavoured with lavender.

The symptoms produced by large doses of arsenic are very severe. The person soon after taking the poison experiences a feeling of faintness and depression, followed by sickness and an intense burning pain in the stomach. Vomiting is soon associated with purging, both being violent and incessant, and affording no relief. There is constant straining, and the evacuations are mixed with blood. There is a sense of constriction with a dry burning heat in the throat, accompanied by the most intense and agonising thirst, which nothing relieves. The skin is sometimes pungently hot, and at others cold and clammy. The patient is in excruciating pain, which is described as being like a fire raging within the body. There are severe cramps in the calves of the legs, and the breath is drawn with difficulty on account of the painful condition of the stomach. A state of insensibility usually supervenes, and the scene closes with paralysis, or death is ushered in by convulsions. The picture is a most horrible and painful one.

Curiously enough, very large doses of arsenic have been occasionally taken without causing death. A man wishing to commit suicide bought and swallowed two ounces of arsenic. The quantity was so large that it was immediately rejected, and the patient recovered with but little treatment.

What to do in Arsenic Poisoning.—1. Send for a doctor. 2. Send to a chemist for "moist peroxide of iron, for arsenic poisoning" or make it by adding ammonia or

sal volatile to tincture of steel, and collecting the deposit. Give as much of it as the patient can be made to swallow. 3. If the patient has not vomited, shake up a teaspoonful of sulphate of zinc in hot water, and give it in two doses, or induce vomiting by draughts of hot water, hot mustard-and-water, salt-and-water, or in any other way. 4. Dialysed Iron given *ad libitum* is a good antidote.

In cases of slow poisoning by arsenic, the symptoms are much less pronounced. In addition to some of those already mentioned, there are usually inflammation of the eyes with an inability to bear the light, an eruption on the skin, and general debility and exhaustion.

There are many different ways in which arsenic may be introduced into the system. For instance, "emerald green," which is a compound of arsenic and copper, is usually found in children's paint-boxes, and is frequently used to colour sweets, and spread over confectionery. It is very largely used for making the various kinds of decorative papers which adorn the walls of our bedrooms and sitting-rooms. So extensively are these papers used that one London manufacturer alone, according to his own statement, at one time used never less than two tons of arsenic weekly. There is not the slightest doubt that living or sleeping in a room covered with arsenical paper produces upon many people the most pernicious effects. Even the workmen who hang these papers or remove them from the walls suffer from slow arsenic poisoning. Arsenic has been frequently detected in the dust on books, picture frames, and the furniture in rooms so papered. In Germany, the manufacture, sale, or use of these dangerous preparations was long ago prohibited under heavy penalties. Many cases of chronic illness or ill-health have been traced to the previously unsuspected presence of arsenic in the wall-paper. The symptoms produced usually resemble those of a very bad cold. There are commonly dryness and irritation of the throat, smarting of the eyes, shortness of breath, languor, headache, loss of appetite, colicky pains, and irritability of the bowels. When the majority of these symptoms have been long present, and have resisted all ordinary treatment, it would be well to turn one's attention to the paper covering the walls of the room. The results of the investigation may prove negative, but still it is a point not to be neglected. It may seem a trifle, but a little thing like this may make all the difference between ill-health and good health, between misery and comfort.

We must now pass on to the consideration of the subject of arsenic eating. After our statement that arsenic is a powerful irritant poison, the necessity for any such consideration may naturally excite surprise. In some parts of Lower Austria, however, in Styria, and especially in the hilly country towards Hungary, there prevails extensively amongst the country people an extraordinary custom of arsenic eating. The statement has been often affirmed, and as frequently denied, but the whole subject has been recently investigated by competent and trustworthy observers, and there can be now no question as to the correctness of the facts. The practice of eating arsenic, it appears, is of considerable antiquity. By many it is used daily through a long life, and the custom frequently becomes hereditary, and is handed down from father to son. The drug, we can hardly in these cases say poison, is known by the name of *hidri*, and is sold to the people by itinerant pedlars, and

herbalists. It is consumed chiefly for two purposes, by the women to increase their charms, and by the men to improve their "wind," and enable them to climb the steep mountains without difficulty. It is said to give plumpness to the figure, clearness and softness to the skin, and beauty and freshness to the complexion. Fortunately there is no necessity for English women to take arsenic with this object. These young female arsenic eaters are described as being remarkable for their clear and blooming complexions, for full plump figures, and for a general appearance of health. Their temporary charms are, however, dearly purchased, for they frequently fall victims to their vanity, and die a painful death. The effect on the men is equally surprising. It not only makes them handsome, but considerably increases their physical strength. A small piece of arsenic is put in the mouth and allowed to dissolve very slowly. The effect is astonishing, the partaker feels at once invigorated, and easily and rapidly ascends mountains which he could not otherwise surmount without the greatest difficulty and distress of breathing. People in this country exhibit no inclination to climb mountains after taking a dose of arsenic.

The directions for arsenic eating are simple, but they are only applicable to Styrians. The quantity of arsenic taken by those who are beginning the practice varies with the age, sex, and condition, but never exceeds half a grain. The dose is taken on alternate days, in the morning before breakfast, until the patient becomes accustomed to it. The dose is cautiously increased as that previously taken loses its effects. No unpleasant symptoms are produced, it is said, if care is taken in the regulation of the dose. But if, after a time, from want of material, or other cause, the habit be discontinued, considerable distress is experienced, so that a return to the practice is necessitated. The habit never amounts to a passion like that of opium eating, and is not an intense pleasure which cannot be resisted, but nevertheless, when once acquired it is seldom abandoned.

It is well known that arsenic is frequently given to horses to improve the sleekness and condition of their coats. The custom is very prevalent in many parts of the Continent. A pinch is either sprinkled amongst the oats, or a piece the size of a pea is wrapped in linen, and tied to the bit before being put in the horse's mouth. It is stated that the practice may be continued for years without producing any injurious effect, but if the animal unfortunately comes under the care of one who is unacquainted with his arsenic proclivities, and fails to give him his daily quantum, he soon becomes low-spirited, and visibly declines in health and strength.

Arsenic made into a paste with starch or flour is frequently used for the destruction of large warts, and the *removal of cancers and tumours* of all kinds. The advertising "cancer curers," who profess to remove malignant tumours "without the use of the knife or caustic," usually employ arsenical paste for that purpose. It is a perfectly safe remedy in the hands of an experienced surgeon, but becomes a very dangerous weapon when entrusted to those who are ignorant of its properties and mode of manipulation. Many people have fallen victims to this treatment through the absorption of the arsenic into the system in quantities sufficiently large to destroy life. An untoward result such as this can occur only when certain well-known precautions are neglected.

Internally arsenic is best given in the form of the arsenic mixture (Pr. 40), the dose being a tea-spoonful every three or four hours.

Of course in the treatment of disease arsenic is given only in very small doses, and not the slightest fear or hesitation need be felt in using it in the manner here indicated. Each tea-spoonful of the above mixture contains about $\frac{1}{120}$ th part of a grain, but this dose is, in most diseases, capable of effecting all that is possible by the use of arsenic.

This mixture should, as a rule, be given after meals, as when administered upon an empty stomach it is apt to induce nausea and irritate the bowels. Children above the age of five will take almost as large a dose of this medicine as adults. Itching or smarting of the eyes and puffiness of the lower eyelid are to be regarded as an indication that the dose is greater than is required, and it should be decreased, though it need not be discontinued.

Arsenic enjoys a high reputation in the treatment of *ague*, and should always be used when bark or quinine is not obtainable, or in cases in which they have been employed unsuccessfully. Arsenic has been used for ages by the Chinese in the treatment of this complaint. It was the active ingredient in a once popular quack medicine known as the "tasteless ague drop."

Arsenic is an excellent remedy in many diseases of the lungs. It frequently proves useful in *asthma*, a circumstance which we naturally associate with its use by the Styrians to improve the breathing. It often gives relief to people who, on catching the slightest cold, are troubled with wheezing at the chest and difficulty of breathing, especially on exertion or at night, so that they have to be partially propped up in bed. It is especially indicated in these cases when there is an eruption on the skin, or when a skin disease has been recently cured. It proves least successful in these cases when they are associated with the expectoration of large quantities of phlegm.

There are many people who are seized every day, or even several times a day, with an attack of persistent sneezing, accompanied by profuse running from the eyes and nose, and sometimes accompanied by severe pain over the forehead. The sneezing is generally attended with itching of the nose, which may be confined to a small spot just inside the nostrils. Each attack may last for several hours, and the patient may have been subject to the complaint for years. Again, every one knows people who are extremely liable to colds, and who when attacked suffer from severe and repeated fits of sneezing, accompanied by pain across the forehead, and a profuse watery discharge from the nostrils. Very frequently the cold spreads down into the chest, and the unfortunate sufferer has, in addition to his previous troubles, to complain of a sore throat, wheezing, and shortness of breath. In all these cases tea-spoonful doses of the arsenic mixture, given every hour, will prove useful. The attacks of sneezing, wheezing of the chest, and general embarrassment of breathing to which children who have recently recovered from bronchitis are often subject, are relieved by arsenic. The mixture should be given hourly in from ten to twenty drops every hour, according to age. This mixture proves also very useful in *hay fever*.

Arsenic is frequently used in certain disorders of the stomach and digestive

apparatus. In *ulcer and cancer of the stomach* it often proves successful in allaying the pain and checking the vomiting when every other remedy has proved useless. In that form of vomiting in which after almost every meal the food rises or regurgitates into the mouth and is vomited without pain, and with hardly any feeling of sickness, the arsenic mixture should be used. Tea-spoonful doses of this mixture, taken shortly before meals, will almost infallibly arrest the distressing *vomiting of drunkards* and others who indulge too freely in spirituous liquors. This form of vomiting is accompanied by great straining and distress, and usually occurs the first thing in the morning before breakfast. Generally very little, and sometimes nothing at all, is rejected, and then it is called "dry vomiting." The vomited matter is intensely bitter and sour, and of a green colour. We have indicated arsenic as a remedy for this condition, but a far more certain cure is afforded by the discontinuance of the habit on which it depends.

Arsenic always proves of service in that form of indigestion which is characterised by the following symptoms:—There is a nasty *sinking in the pit of the stomach*, which is promptly relieved by food, but immediately on eating anything the unfortunate sufferer is seized with an urgent desire to relieve the bowels, and is obliged to leave the table and his unfinished meal. This is repeated over and over again, the patient being reduced to a condition in comparison with which the sufferings of Tantalus must have been happiness itself. By a few days' use of the arsenic mixture, the interval between the meal and the evacuation becomes prolonged, and usually in about ten days the complaint is cured. One or two tea-spoonfuls of the mixture should be given shortly before each meal.

The arsenic mixture often proves useful in other obstinate forms of *diarrhœa*, and has been used with considerable success in *cholera*.

In many diseases of nervous origin arsenic proves of considerable value. In *St. Vitus's dance* especially, we may rely with confidence upon this remedy. It proves most successful in simple uncomplicated cases. Of course, should there be any fever, this must be subdued by appropriate remedies, or should the patient be anæmic, the condition of the blood should be improved by iron in the manner already indicated. These complications being removed, the use of arsenic may be resorted to with confidence. Should the ordinary one or two tea-spoonful doses of the mixture not effect a cure, the quantity may, in this disease, be increased, even in children, to a table-spoonful every four hours.

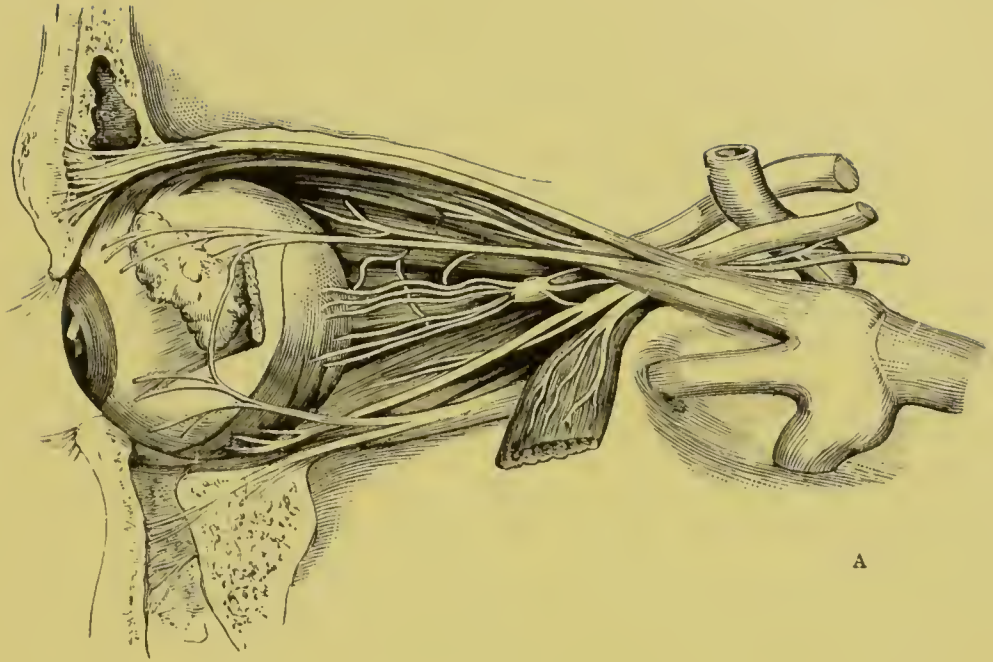
The smaller doses often prove extremely useful in *neuralgia*.

ATROPINE, THE ACTIVE PRINCIPLE OF BELLADONNA.

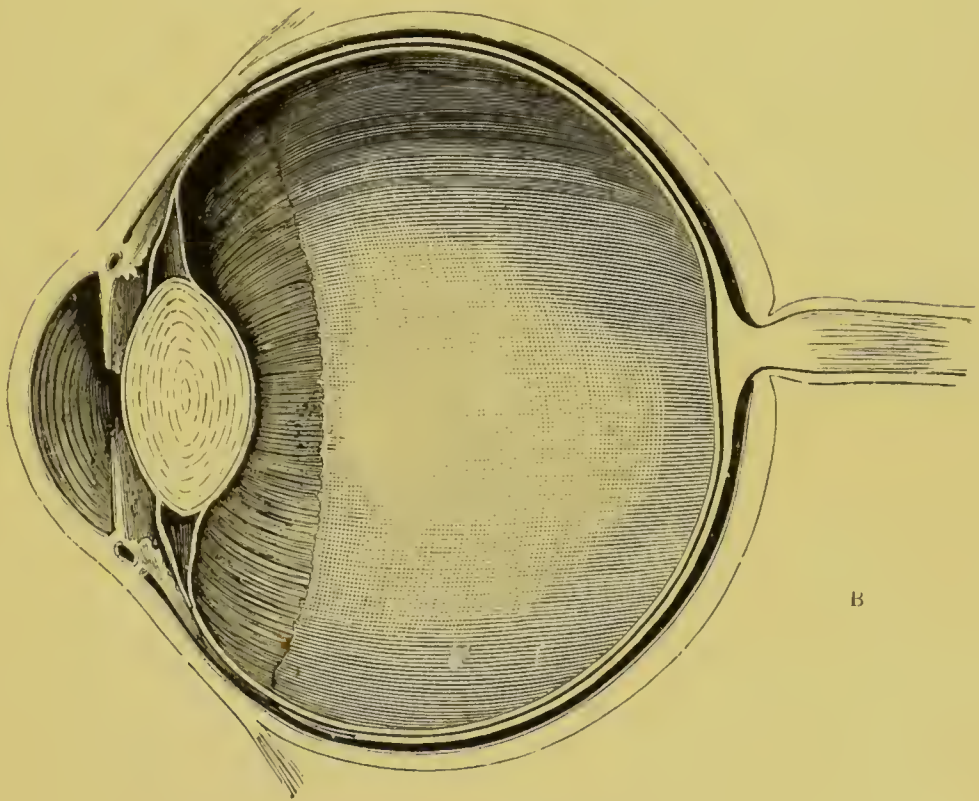
See p. 773.

BARK AND QUININE.

Cinchona bark, the bark *par excellence*, is the plant from which we obtain our quinine. Many stories are told of the mode in which its properties were first discovered. By some it is said that an Indian was cured of an ague by drinking at a



A



B

.. Nerves of the Eye.

|

B. Section of Eyeball.

pool into which some cinchona trees had fallen. It may be so, although it is unfortunate that these trees never by any chance grow on the borders of lakes or ponds. By others it is related that the Indians observed that the American lions, when ill with ague, eat the cinchona bark. We are only surprised that these animals should not have extracted the active principle, instead of using the drug in its crude state. Another story is that the Jesuits had noticed the extreme bitterness of the bark, and being of an enterprising disposition, had, with a self-denial which cannot be too highly commended, administered it without the slightest fear or hesitation to a brother of another order who happened to be ill. The treatment proved successful, and they received the credit which they so richly deserved. It would appear that bark was first introduced into Europe about the year 1632. It is usually stated that we are indebted to the Countess of Chinchon for the importation, and the drug from that circumstance acquired the name of "Cinchona bark," or "Countess's powder." As there appears to be some



Fig. 2.—CINCHONA CALISAYA.

doubt as to which Countess of Chinchon is referred to, we take this opportunity of stating that the lady in question was the wife of Count Chinchon, Don Geroninio Fernandez de Cabrera Bobadella J. Mendoza. After this explanation we proceed with the history of the drug. About ten years later it was carried by the Jesuits to Rome, and by them distributed among the members of their order, by whom it was taken to their respective stations, and used with great success in the treatment of agues. One of the most active in

promoting its employment was Cardinal de Lugo, and in this way it acquired the names of "Jesuits' bark" or "Jesuits' powder," and "Pulvis Cardinal de Lugo." In time, however, it, like many another drug, fell into disuse, and its very existence appears to have been forgotten by most people. But not by every one, for a few years later Sir Robert Talbot acquired a great reputation for the cure of ague by a secret remedy, which when purchased for a large sum by Louis XIV. turned out to be nothing more than our old friend the cinchona bark. From this time forth the drug was known in France as "Talbot's powder" or the "English remedy."

The genus yielding the bark has been divided into a large number of different species, twenty-one being enumerated by one botanist alone. Innumerable books, memoirs, and pamphlets have been written about these different species without any one being a bit the wiser. It is now generally admitted, however, that there are three chief kinds of bark—the yellow, the pale, and the red. The different species of cinchona are natives of the Andes, growing chiefly on the eastern face of the Cordilleras. The cinchonas have been acclimatised in India, and of late years its cultivation has been so immensely extended that British India bids fair to compete at no distant period with Central and South America as a source of quinine. The cinchonas themselves seldom form an entire forest, but are collected into more or less compact groups, distributed in different parts of it, and sometimes even they grow separately. The characteristics of these forests are of a tropical nature. Palms are nearly always abundant, and in many parts form their chief feature. In addition, there are tree ferns, gigantic climbers, bamboos, plaintains, and other plants.

The men who cut the cinchona trees in the forest, and others who are employed in the same trade, are known as *cascarilleros*. They gather the bark all the year round except during the rainy season, which corresponds with our winter, when the process must be suspended on account of the physical obstacles to its continuance. A great deal of skill and practice is required on the part of the *cascarillero* to detect the presence of the cinchona trees in the dense forests. If the position be favourable the tops of the trees first attract his notice, a slight movement peculiar to the leaves of certain species, or a particular colour of the foliage, enabling him to distinguish the object of which he is in search from a distance of many miles. Very frequently the dry leaves found on the ground are sufficient to indicate the direction in which the search should be prosecuted. In order to strip the tree of its bark, it is felled by being cut through with a hatchet a little above the root. The bark is previously removed from this part, so that nothing may be lost; and as at the base of the tree the bark is thickest, and therefore most profitable, it is customary to remove the earth from around the trunk, so that the barking may be more complete. The tree seldom falls at once when cut through, for it is sustained either by climbing plants or by the adjacent trees. When at length the tree is down, and the useless branches have been cut off, the outer coat is removed by striking it with a mallet, and the inner bark so exposed is often further cleaned by a brush. The bark is then divided by regular incisions circumscribing the pieces which are to be removed, and these are separated from the trunk with a knife, the point of which is carried as

closely as possible to the subjacent wood. The dimensions and regularity of the pieces necessarily depend more or less on the position in which the tree has fallen and other circumstances, but generally, for the convenience of transport, they are made from fifteen to eighteen inches long and four or five inches wide. The bark is usually dried in the sun, and is in some cases submitted to pressure to induce it to retain its shape and prevent it from curling up into quills.

Quinine is prepared from cinchona on a large scale, the different barks yielding



Fig. 3.—COLLECTING CINCHONA BARK.

from three to ten per cent. It is met with in beautiful, silky, snow-white crystals, having a pure intensely bitter taste. It is but slightly soluble in water, but soon dissolves on the addition of a few drops of acid. It is the chief alkaloid or active principle contained in bark, the use of which it has to some extent superseded. The smallness of the dose required is a great advantage, a grain or a grain and a half being equal to a drachm of the bark.

When very large doses of bark or quinine are administered, a condition is induced which is known as "cinchonism" or "quinism." The symptoms to which collectively this term is applied are headache, noises in the ears, deafness, flashes of light before the eyes, confusion of sight, giddiness, and sometimes even slight

delirium. Usually the headache is dull, heavy, and stupefying, but when a dose of twenty-five or thirty grains has been given, it is often agonising. Fortunately these symptoms are of short duration, and usually all pass off in a few hours. Some people are very susceptible to the action of quinine, and in them a comparatively small dose may produce the above symptoms. These unpleasant effects need not lead to the abandonment of the drug, a reduction in the quantity or in the frequency of administration being all that is requisite.

Bark has been long known to us as a most powerful and valuable tonic, and it may be administered with confidence in that large class of cases to which we apply the general term *debility*. It is useful when there is *want of tone*, as indicated by a general feeling of weakness, an incapacity for exertion, impaired appetite, and dyspeptic symptoms. In fact, when people are over-worked, bothered, and feel regularly out of sorts, they cannot do better medicinally than take bark or quinine.

Then, again, bark is useful for people who have been pulled down by a long, painful illness, who have been knocked "clean off their legs" and "can't pick up again." It is often given as a preparation for, or after surgical operations. It is common enough to hear medical men say, "We'll give you a little ammonia and bark, and that'll soon put you all right again," and nine times out of ten it proves successful. The ammonia and bark mixture (Pr. 13) is a powerful tonic, and may be employed with confidence.

It is not a very nice mixture, perhaps, to look at, but as it is intended to take, and not to be looked at, this is a matter of very little consequence. It may be objected even that it is not very nice to take, but even taste is quite a matter of opinion, and any man with the slightest imagination can persuade himself that it is very nice indeed, if he will only remember that it will do him good. It is not at all a bad plan to take it in half a glassful of port wine. It is often said that this is spoiling two good things, but you can but follow it by a dose of each separately if you do not like the combination. Do not imagine that any wine is good enough for medicine. You cannot make a greater mistake. Take the best bottle of wine in your cellar—do not hesitate, it will do you good.

The tonic quinine mixture (Pr. 9) is an excellent restorative. We call it the "tonic" quinine mixture, because, as we shall presently see, we use a stronger quinine mixture—not as a tonic, but in the treatment of certain diseases, such as blood poisoning. As we have already seen, quinine dissolves very slightly in water, and the acid is consequently added to make a clear solution. Would not the quinine do any good if taken in the insoluble form? Yes, it would answer just as well, for the gastric juice secreted by the stomach is, as you know, acid, and this would very soon dissolve up the quinine. Then, after all, there is not much good in the acid? Well, perhaps there is not, it is more a matter of convenience, and for the sake of appearance, than anything else.

Then, again, in *ague* quinine is a specific—a positive cure. The treatment of *ague* by quinine has already been fully discussed (*see AGUE*), the best mode of administration, the time, and the dose in which it should be given, &c.

There is a very nasty form of neuralgia known as "brow *ague*." People who have had *ague*, perhaps years before, sometimes suffer from this when they get out

of health. It is neuralgia of the brow, a pain just over the eyebrow, and sometimes it is periodic, that is, it always comes on just at the same time of the day. It is generally pretty punctual, and does not often forget its engagements. A watch is almost superfluous to people who suffer from this complaint. Fortunately it is nearly always cured by large doses of quinine, which should be given about half an hour before its expected visit. The strong quinine mixture (Pr. 10) will have to be used for this purpose, as the dose in the tonic mixture is too small.

Sometimes in these cases of neuralgia the quinine taken "little and often" will do more good. Send for half a drachm of sulphate of quinine, and take as much as will adhere to the top of your finger every five or ten minutes. It is like drinking a glassful of wine a sip at a time—"sweet sorrow long drawn out." *Blood poisoning*, or, as it is technically called, *pyæmia*, is often treated by this quinine mixture given every four hours, and sometimes even much larger doses are given. The same method of treatment is often followed with advantage in other diseases attended with fever, such as *inflammation of the lungs*, *typhoid fever*, *typhus fever*, &c. The quinine reduces the temperature, or, in other words, brings down the fever and the preternatural heat of the body.

For *noises in the head* quinine may be given with advantage. Some people are perpetually troubled with a noise in their ears like the ringing of bells, or the rumbling of distant machinery. This condition is curable by the quinine mixture (Pr. 9), ten drops being taken every ten minutes for the first hour, and subsequently hourly. This mode of treatment nearly always proves successful. It would be impossible to enumerate all the uses of bark and quinine—their number is legion—but we have, we trust, said enough to indicate the class of case for which it should be used, and, in conclusion, we can only wish you every success.

BELLADONNA.

The *atropa belladonna*, dwale, or deadly nightshade, belongs to the natural order Solanaceæ, the family which yields us our potato. It grows in many parts of Britain on calcareous soil, but it is not by any means common. It is generally found in shady lanes and hedges in the neighbourhood of villages and ancient ruins. It is rarely met with in or near London, but it grows in abundance at Rochester, in Kent, in Windsor Park, and about Box Hill, in Surrey, and very luxuriantly amongst the ruins of Furness Abbey, in consequence of which the valley is called the Vale of Nightshade.

It is difficult to say why it is, but the belladonna is always associated with something romantic. Even in the name there seems to be a spice of romance. *Atropa* is derived from *Atropos*, the goddess whose duty it was to cut the thread of life without regard to sex, age, or quality, and it is supposed to be indicative of the inevitable fate of those who yield themselves to its influence. The Venetian ladies used water distilled from the plant as a cosmetic, from which circumstance it acquired its name, *bella donna*, beautiful woman.

We must enter somewhat fully into the consideration of the botanical character of the plant, as it is often confounded, even by those who ought to know better.

with the *Solanum dulcamara*, or woody nightshade. The whole plant is of a lightish green colour, except the flowers, which are large and of a dingy brownish-purple, and the berries, which are of the rich deep black of black cherries. The root is thick, fleshy, and much branched; the stem grows about two feet high, and the leaves are oblong, tapering to each end. The flowers are bell-shaped, larger than those of the harebell, and placed singly in the bosom of the leaves. The border of the corolla is cut into five equal lobes, and there are five stamens and a tapering pistil with two cells. The odour of the whole plant is nauseous and oppressive, as if to give warning of its venomous nature.



Fig. 4.—BELLADONNA.

Belladonna when taken in poisonous doses produces dryness of the mouth, thirst, and difficulty of swallowing; the face becomes flushed, the eyes bright, the pupils dilated, and the sight dim and hazy. Very frequently the whole body is covered with a bright red rash, resembling scarlet fever, and it is even sometimes followed by peeling of the skin. The mind and senses become peculiarly affected, and a form of madness is produced. The ideas become incoherent and extravagant, and there is often decided delirium, with pleasing illusions. Sometimes the unfortunate patient is possessed with constant restlessness, keeps continually moving, and cannot be quieted. The delirium may be furious and dangerous, and occasionally under the influence of this drug people have become so unmanageable that they have had to be confined in a mad-house. It has been supposed that it is

to the madness produced by belladonna that Banquo refers when he asks Macbeth—

“ Or have we eaten of the insane root
That takes the reason prisoner ? ”

This may or may not be, but there is no doubt that the poisonous properties of the plant have been long known, for Buchanan, the Scottish historian, states that the Danes were treacherously defeated by the troops of Macbeth, who during a truce sent Sweno bread and a mixture of wine and ale containing poison, which from the description of the symptoms produced can have been none other than our belladonna.

During the Parthian war the troops of Mark Antony were greatly distressed for provisions, and belladonna is probably the plant referred to by Plutarch in the following passage :—

“Those who sought for herbs and pot-herbs obtained few that they had been accustomed to eat, and in tasting unknown herbs they found one which brought on madness and death. He that had eaten of it immediately lost all memory and knowledge ; but at the same time would busy himself in turning and moving every stone he met with as if he was upon some very important pursuit. The camp was full of unhappy men bending to the ground ; and thus digging up and removing stones till at last they were carried off by a bilious vomiting, when wine, the only remedy, was not to be found.”

What to do in Belladonna Poisoning. — 1. Send for the doctor. 2. If there have been no vomiting, give an emetic—a tea-spoonful of ipecacuanha wine, or ten grains of sulphate of zinc every few minutes till the desired result is obtained, or salt-and-water, or mustard-and-water. The emetic draught (Pr. 27) may be used. 3. Give stimulants—hot brandy-and-water, sal volatile, &c.

Quite recently a drug has been introduced into this country which is said to be a true antidote for belladonna. It is a native of South America, and is known as jaborandi. It is hardly likely to be at hand in cases of emergency, although it is readily procurable from the better known chemists in London and other large towns. The tincture of jaborandi may be given in a tea-spoonful dose, or, if the leaves are obtained, two drachms should be broken up and infused, and the resulting liquid and its dregs taken. Cases of belladonna poisoning are so common that it would be a great advantage to have an antidote on which implicit reliance could be placed.

The preparations of belladonna are, for internal administration, an extract and a tincture ; whilst for external application there are a plaster, a liniment, and an ointment.

For the relief of *pain in the muscles* and *over-sensitiveness of the skin*, few applications prove more efficacious than the belladonna liniment. It should be rubbed over the tender and painful spot several times during the course of the day. For *pains in the side* and *lumbago*, a large belladonna plaster may be used with benefit. It should be applied smoothly and carefully, and may be worn with advantage for several days, or even weeks.

Belladonna has the power of checking and ultimately arresting the secretion of milk, a property of which advantage may be taken by mothers who, having a good breast of milk, are yet from any cause unable to suckle the child. The breast in these cases often becomes greatly swollen and exquisitely painful, a condition which, if not relieved, may go on to the formation of *milk abscesses*. Belladonna speedily gives relief and obviates this danger. Either the liniment, extract, or ointment may be used, and should be well rubbed in several times a day, especially in the neighbourhood of the nipple. The earlier the application is made, the more speedy will be the relief obtained ; but even should inflammation have set in, the continuous application of belladonna for twenty-four or forty-eight hours will, even under these adverse circumstances, usually arrest the formation of matter.

Not only has belladonna the power of arresting the flow of milk, but it also checks *excessive sweating*. The belladonna liniment used two or three times a day will completely check the *perspiration of the head and face of young children*, which

is often so profuse as to soak their hair and the pillow upon which they have been sleeping. Many people are all their lives troubled with profuse *sweating of the hands and feet*, a complaint which may be gradually diminished, and sometimes completely arrested by rubbing in the belladonna liniment three or four times a day. Sometimes the perspiration secreted by the feet is not only in excess, but is also of an extremely offensive nature. An agreeably-smelling and extremely efficacious application may be obtained by requesting the chemist to use eau de Cologne instead of spirit in the preparation of the tincture of belladonna. It should be applied several times daily. The internal administration of belladonna is often efficacious in arresting the *night sweating* which is so great a trouble to consumptive patients.

Belladonna administered internally is a very valuable remedy for *sore throat*, and in many cases will effect a positive cure. It is especially useful when there is *much heat and pain on swallowing, with bright redness of the affected parts, flushed face and headache*.

Belladonna is very conveniently given in the form of the mixture (Pr. 39)—a tea-spoonful every quarter of an hour for the first hour, and subsequently hourly.

In the sore throat of *scarlet fever* this mixture will often prove of considerable value, mitigating the severity of this distressing symptom. It is often claimed for belladonna that it acts as a kind of charm against scarlatinal contagion, and prevents people from catching the fever. This is open to question, and such a statement must be received with a good deal of caution; but at the same time there can be no possible harm in taking the above mixture as directed when scarlatina is prevalent, or breaks out in a household.

The tincture of belladonna is often useful in certain forms of *headache*. The indications for its use are when the *pain is situated over the brows and in the eyeballs, and when they seem to the sufferer as if they were too large for the head and would be forced out of the skull*.

Belladonna often succeeds in allaying both the cough and oppressed breathing of *asthma*. It is essential for ensuring success to employ large doses. Fifteen drops of the tincture should be given every two or three hours, and if this produces no unpleasant symptoms, the quantity may even be increased. The same dose given to children every hour is one of the best remedies for *whooping-cough*. It must be remembered that children are not very susceptible to the action of this drug, and that they will take almost as large a dose as an adult.

The tincture of belladonna is both speedier and more certain in its action than any other remedy for that troublesome and distressing complaint of children *wetting the bed*. From ten to twenty drops must be given three times a day in a little water. The treatment has often to be continued for a fortnight before it proves successful.

A celebrated French physician was very successful in the treatment of constipation and torpidity of the bowels by belladonna. He gave it in the form of pills, each containing $1\frac{1}{2}$ grains of extract of belladonna, and the same quantity of the powdered belladonna leaf. One of these pills must be taken in the morning

before breakfast, the dose being gradually increased to three or four pills if the desired effect is not previously obtained. As soon as the stools become regular, the belladonna must be discontinued and the organs allowed to act without assistance.

BISMUTH.

There are two salts of the metal bismuth used in medicine—the subnitrate and the carbonate. The former was long known under the title of “magistery of bismuth” or “pearl white,” whilst the latter has been comparatively recently obtained. The term “white bismuth,” which was formerly applied to the subnitrate, is no longer distinctive, as both salts are fine white powders insoluble in water. They are blackened by that gas of rotten-egg-like odour which we call sulphuretted hydrogen, a fact to be borne in mind by ladies who simultaneously use bismuth as a cosmetic, and indulge in the use of Harrogate waters. It would be unpleasant to suddenly turn black in the face whilst taking your afternoon tumbler at the springs.

Internally the bismuth preparations are used almost exclusively in diseases of the stomach and digestive apparatus. Bismuth is essentially a stomach medicine. Pain in the stomach, whether dependent on disease or merely arising from that somewhat irritable organ being a little “upset,” is generally eased by a bismuth mixture (Pr. 18). The dose is two table-spoonfuls every four hours. The use of the tragacanth is to suspend the insoluble powders in the liquid and to prevent them from settling to the bottom. The mixture should be shaken before being used. In this, as in all other cases, the bismuth mixture is to be taken before meals. It will do no good if poured into the stomach already distended with food.

This mixture alleviates the pain arising from *cancer*, *ulcer*, and *chronic inflammation of the stomach*.

It proves beneficial in that form of *irritable stomach* which is so often a concomitant of habitual indulgence in ardent spirits. It subdues the pain, checks the vomiting, and enables the patient to take food. It need hardly be said that a more effectual remedy is afforded by the discontinuance of the habit on the existence of which these symptoms are dependent. It may also be given with advantage in *cramp in the stomach*.

That form of *dyspepsia* or *indigestion* which is accompanied by the return of a little fluid from the stomach into the mouth is often amenable to bismuth. Flatulence or wind in the stomach is often cured by the bismuth and charcoal powders (Pr. 75), one to be taken three times a day half an hour before meals.

Carbonate of bismuth is a very valuable remedy for some forms of *chronic diarrhoea*. It is especially useful in that intractable diarrhoea which so often proves fatal to patients in the last stage of consumption. It is absolutely necessary to use large doses. Half a drachm or a drachm of the subnitrate of bismuth must be given several times a day. It should be administered in a little milk, and when so taken, rarely upsets the stomach or causes any inconvenience. We have no hesitation in saying that bismuth, used in this manner, has prolonged the life of many a sufferer whose career the diarrhoea and consequent exhaustion would soon have brought to

a close. In these cases bismuth is our sheet-anchor. Not only will it subdue the diarrhœa, but it sometimes effects so great an improvement in the general health, that those whose speedy death seemed inevitable rally, and ultimately return to the ordinary duties of life.

Obstinate *diarrhœa occurring in children* may be checked by bismuth. A grain of the subnitrate of bismuth may be given every hour, and its value is greatly enhanced by the addition to each dose of one-sixth of a grain of grey powder.

Bismuth is sometimes administered in the form of a colourless liquid known as citrate of bismuth and ammonium, the dose of which, given in water or some simple infusion, is from one to three tea-spoonfuls.

BLACK DRAUGHT.—*See SENNA*, p. 881.

BLISTERS.—*See CANTHARIDES*, p. 784.

BORAX.

Borax is found native in Thibet and imported from India. It is a colourless, almost transparent salt, having a saltish taste. It dissolves readily in water, especially in hot water.

Sponging the head several times a day with a strong solution of borax in water is an excellent remedy for scurf or dandriff. It quickly loosens the scales and cleans the head. Glycerine of borax, made by dissolving an ounce of borax in four ounces of glycerine, is a still more effectual remedy. It should be applied at bed-time, and kept on all night. Borax ointment—one part of borax to eight of simple ointment—is another good preparation. A liniment of equal parts of olive oil and lime often proves useful.

Borax is a very soothing application for all affections of the throat. Honey of borax is an excellent preparation, and is made by adding a drachm of powdered borax to an ounce of honey. An excellent gargle may be made by mixing one drachm of borax and two drachms of honey with four ounces of water.

Borax enters into the composition of many preparations for the teeth and gums. The following is an excellent mouth-wash:—Myrrh, one part; eau-de-Cologne, sixteen parts; borax, one part; water, three parts; and syrup, three parts.

BORACIC ACID, OR BORIC ACID.

This is one of our most valuable remedies. It is made from borax by the action of sulphuric acid. It is composed of beautiful pearly scaly crystals which are soluble in water. It is used as an antiseptic dressing for wounds, and is also employed as a lotion and as an ointment. There is an ointment in the Pharmacopœia known as boracic acid ointment which is kept by chemists ready for use. It is largely used as an application for burns and various skin diseases, and also to allay itching. Boracic acid, if very finely powdered, makes the best dusting powder for children, and is far better than the common “violet powder” of the nursery. Dissolved in glycerine it is a good application to the throat in diphtheria and croup, and is often employed to moisten the tongue and keep the mouth clean

and the breath sweet in cases in which an antiseptic is required, as, for example, scarlet fever or typhoid fever. A little boracic acid sprinkled in the socks will prevent any disagreeable odour from the feet in hot weather. It may in fact be used in almost every case in which an antiseptic is indicated. It is not poisonous, and a few grains added to a pint of milk will prevent it from turning sour even in the hottest weather. There is a liquid preparation known as "Boro-Glycerine," which not only keeps milk, but also keeps fish and game and meat for an almost indefinite period.

BRIMSTONE.—*See* SULPHUR, p. 886.

BROMIDE OF POTASSIUM.

Bromide of potassium is prepared from bromine, a dark red liquid of intensely disagreeable odour, obtained from sea-water and sea-plants. Bromide of potassium very closely resembles iodide of potassium, although its curative powers are of a totally different order. A formula for a bromide of potassium mixture has already been given (Pr. 31).

Many people who are actively engaged during the day find it excessively inconvenient to constantly carry with them a half-pint bottle of medicine, and yet are unable to dispense with its assistance. Two or three doses may be carried without much trouble in a small sherry flask, but the difficulty is, perhaps, more readily overcome by taking the bromide of potassium in its natural state, and not in the form of a mixture. An ounce of the salt when powdered may be readily divided into thirty equal portions, each of which will be a dose equivalent to two table-spoonfuls of the mixture. The powders may be carried in a little box in the pocket, and a dose of the medicine may at any time be taken by dropping one of them into a glass of beer, milk, or water, or any other liquid which may be at hand.

In the case of children it is often a great advantage to be able to give them medicine without their knowledge. With the bromide there is no difficulty, for it may be powdered and placed in the salt-cellar with an equal quantity of common salt, and taken at meals in the ordinary way. The little patient will regard the fact of his having a salt-cellar "all to himself" as a delicate mark of attention, and if generously disposed will probably offer to share it with the other members of the family.

Bromide of potassium is a nervine sedative, that is, it exerts a soothing or calming influence on the nervous system. It is a drug which has fluctuated greatly in the estimation of medical men, but no doubt can now be entertained as to its inestimable value in many diseases of a spasmodic character.

Bromide of potassium is undoubtedly the most valuable remedy we possess for epileptic fits or falling sickness. The mixture, if taken three times a day, will sometimes completely cure this complaint, and even in cases in which the cure is not complete it proves extremely valuable in reducing the frequency and severity of the fits. By the use of this medicine the patient is enabled to ward off his attacks, so that instead of occurring several times a day he may be free from them for weeks or months, or even years. It must be remembered that epilepsy is often an old-standing complaint,

and that such cases are not cured in a day. The disease had secured a firm hold upon the organism, and nothing but a prolonged course of treatment will serve to shake it off. The bromide of potassium must be persevered in week after week, and its use should never be rashly abandoned because its beneficial effects are not at once apparent. When the drug has to be continued for any length of time it is advisable to regularly suspend its use on one day in the week, or at longer intervals for several consecutive days, for if this precaution is neglected the system becomes accustomed to its use, and its influence over the disease is greatly impaired. When the fits occur only at night, two doses of the mixture may be taken together at bed-time, and none during the day.

In *convulsions* in children a tea-spoonful of the mixture may be given every four hours with advantage.

In *whooping-cough* tea-spoonful doses will often effect a cure, though this medicine usually proves of no avail when the child is at the same time cutting his teeth.

In *somnambulism*, *night-screaming*, and *nightmare*, this mixture usually proves beneficial when given at bed-time in doses of two table-spoonfuls for an adult, and two tea-spoonfuls for a child. Many people who have been over-worked or have over-taxed their brains, so that they cannot sleep at night from a *feeling of worry and anxiety*, obtain relief from the bromide of potassium mixture taken at bed-time. It calms the excitement, so that a refreshing night's rest is obtained, and strength recruited for meeting the troubles of the morrow.

Bromide of potassium is *the* remedy for *spermatorrhœa*. You can get half an ounce of bromide of potassium from any chemist for a few pence. Put it in a pint bottle full of water, and shake it for a few minutes. Take three table-spoonfuls three times a day. Wyeth's tabloids of bromide of potassium are useful.

In *delirium tremens*, bromide of potassium is often given with marked benefit; it quickly removes the delusions, calms the delirium, and induces sleep. The mixture should be given in two table-spoonful doses every two hours until the desired effect is produced. The happiest results may be looked for when the case is taken early, particularly before the furious maniacal delirium has set in. The longer the use of the medicine is delayed, the less likely is it to prove of service.

The uninterrupted use of this medicine for long periods, as is sometimes necessitated in the case of sufferers from epilepsy, occasionally gives rise to a condition known as "bromism." Its occurrence is usually indicated by lowness of spirits, a feeling of depression, and disinclination for work, accompanied by an eruption of spots on the face and back. These symptoms quickly disappear on the suspension of the medicine for a few days.

BRYONIA.

The common or red-berried bryony (*Bryonia dioica*) is a native plant belonging to the cucumber family. It is found plentifully in Kent and many other counties in England, climbing by means of its tendrils over the hedges by the wayside. The leaves, which are borne on long foot-stalks, are large, hairy on both sides, and divided into five lobes. The flowers, though not by any means striking objects, are

of a yellowish-white colour, and are elegantly streaked with green veins. The fruit is a small, round, red berry, about the size of a common pea. The root, which is the part used in medicine, is large and fleshy, and is often as thick as a man's thigh. It has an extremely disagreeable odour and a particularly nauseous taste, both of which, however, can be removed by frequent washing with cold water.

There are many diseases in which the use of bryonia has been strongly recommended, and it exerts a marked influence over the serous membranes which line the large cavities of the body. Thus, it is especially extolled for its powers of absorbing the fluid from the chest in cases of *pleurisy*.

It is often used in a *bad cold on the chest*, the indications for its use being heat and soreness beneath the breast-bone, and an irritating, shaking cough attended with but little expectoration. In *inflammation of the lungs* considerable benefit has been experienced from its employment.

In some forms of *headache* it proves useful; for instance, in congestive headache, which is characterised by pain in the forehead, relieved by pressure, but much increased by stooping down. It also does good in headache confined to one side, and accompanied by retching and bilious vomiting.

Indigestion, particularly when indicated by weight at the pit of the stomach, eructations, and water-brash, may be relieved by this drug.

Bryonia is usually given in the form of a tincture, one part in ten, of which the dose is a drop every hour, or a smaller quantity more frequently repeated. A drop of the tincture is contained in each tea-spoonful of the bryony mixture (Pr. 49).

CALABAR BEAN.

The Calabar bean (*Physostigma venenosum*), or ordeal bean of Western Africa, belongs to the family of plants which yields us our ordinary domestic peas and beans. The portion used in medicine is the seed, which is of a brownish-red or pale chocolate colour, and closely resembles a large horse bean. It contains two white kernels, which are undistinguishable in taste from a haricot bean. Its use by the natives of Calabar as a judicial test has been already mentioned. The common belief is that if it is rejected by the accused he is innocent, but that if it is retained and proves fatal he is guilty, and that it served him right. So strong is the popular belief in the test that a suspected person often voluntarily takes a dose with the view of establishing his innocence, probably under the impression that he will leave the court without a stain on his character, but finds only too late that he is the victim of misplaced confidence. *Physostigma*, when taken in poisonous doses, produces paralysis, chiefly by its action on the spinal marrow, death ultimately ensuing from deficient action of the muscles by which breathing is ordinarily performed. A few years ago at Liverpool, from fifty to sixty children were accidentally poisoned by these beans. It was ascertained that the sweepings of a ship from the western coast of Africa had, with a carelessness which was almost criminal, been thrown on a heap of rubbish, where the children had found the beans and eaten them. Fortunately, death ensued in only one case.

Calabar bean is undoubtedly the most valuable remedy we possess for *paralysis*.

of the limbs, especially when the legs only are affected. In very old-standing cases, where the patient has been helpless for years, little or no benefit will in all probability be experienced, although if the disease is progressing, every hope may be entertained of arresting its course. In cases in which the disease is of recent origin the happiest results are often obtained by the use of this drug.

The preparation of Calabar bean used for medicinal purposes is an extract—the extract of physostigma. It should be made up into little pills, each containing $\frac{1}{30}$ th of a grain, one of which should be taken every two hours. The following is the formula:—*Calabar Bean Pills*.—Extract of physostigma, $\frac{1}{30}$ th of a grain. To be made into a pill. One to be taken every hour.

It must be remembered that a complaint of this nature is not readily cured, and that the use of the pills will have to be persevered in for weeks or even months before any decided improvement is noticeable. The patient must not despair because his progress towards recovery is very gradual.

In an allied complaint, known as *locomotor ataxy*, or the stamping palsy, this method of treatment proves equally efficacious, the results being, in many cases, very striking, especially when the complaint is taken in an early stage.

In *writers' cramp*, the pills employed in the manner indicated will often effect a cure, even in cases apparently hopeless.

In the *general paralysis of the insane*, Calabar bean has proved markedly useful, not only arresting the progress of the disease, but also improving the mental and physical condition of the patient. Several cases of *tetanus*, or *lock-jaw*, have been cured by large doses of extract of physostigma, a quarter of a grain or more being given every hour. A drug which exerts a beneficial action on diseases of so serious a nature must be regarded as one of the most valuable in our armament.

CALOMEL.—See MERCURY, p. 840.

CALUMBA.

Calumba is a good, old-fashioned tonic, and one of our pleasantest and most agreeable bitters. It improves the appetite, assists digestion, and is often retained by the stomach when bark or quinine would be at once rejected.

It is the sliced root of a plant known botanically as the *Jateorrhiza Calumba*. Its history and native country were for many years involved in obscurity, although it was supposed that its name was derived from Colombo, the principal town in the island of Ceylon. It is now ascertained that our supply is obtained entirely from the dense forests of Mosambique, on the east coast of Africa. It is not cultivated, as the spontaneous produce is sufficient to meet the demand. The offsets of the root of the “kalumb,” as it is called by the natives, are dug up in the hot season, cut transversely in slices, and then carefully dried.

We usually receive it in circular or oval pieces about the size of half a crown, but somewhat thicker. It is a light yellow colour towards the centre, but is surrounded externally by a darker part, having a brown wrinkled appearance. A good specimen should be solid and heavy, and not spongy or worm-eaten. The odour is faint, and somewhat aromatic, whilst the taste is very bitter. Two preparations

of calumba are in common use, a tincture and an infusion. The infusion is made by macerating, for half an hour in a covered vessel, half an ounce of calumba root, cut small, with half a pint of cold water, and then straining. Unfortunately this infusion will not keep, and in a day or two becomes mouldy. The dose of the tincture is from a half to a tea-spoonful, and of the infusion two table-spoonfuls.

The infusion may be given with advantage in cases of *general debility, loss of appetite, and indigestion*. Like all medicines intended to improve the appetite, it must be given shortly before meals. It is of all bitters the least likely to disagree with the stomach, and during convalescence after a serious illness it is an excellent preparative for a more powerful tonic, such as bark. Calumba may be conveniently given in combination with acids or alkalies. It has a great advantage over most other tonics, that it does not form a black unsightly mixture when administered with iron.

From a closely allied species, *Cocculus indicus*, berries are obtained, which it is rumoured are largely used for two illegal purposes—firstly, to intoxicate fish, so that they may be readily captured, and secondly, to adulterate beer. They are said to be very extensively employed by the brewers in the manufacture of porter, giving it an inebriating quality which passes for strength. It is a powerful poison, and its effects on the system are most injurious.

CAMPHOR.

Camphor is obtained from a large forest tree with evergreen shining leaves, which grows wild in Japan. The drug is diffused throughout all parts of the plant, and is procured from the wood, root, and branches, which are first cut into chips, and then distilled. The crude camphor so obtained is separated from its impurities by being mixed with lime and sublimed into thin glass vessels, which, on being broken, yield us the pure substance in the bell-shaped masses in which we usually see it in the chemist's window. It is white, translucent, tough, and crystalline, and has a powerful penetrating odour, and a pungent, bitter taste. It floats readily on water, and, when lighted, burns with a clear brilliant flame. It is poison to fleas, bugs, and other insects, a property by no means to be despised. The Chinese use the fragrant white wood of the camphor tree in making trunks and cabinets for protecting articles of clothing from the ravages of moth.

The preparation of camphor most commonly used is the spirits of camphor, made by dissolving one ounce of camphor in nine fluid ounces of rectified spirit. Sometimes it is advisable to use the stronger "essence of camphor." It is a saturated solution of camphor in spirit, and is made by dissolving an ounce of camphor in an ounce and a quarter of rectified spirit. Rubini's preparation contains about a grain in a drop. Camphor is not usually regarded as a very active poison, but the strong preparations must be used with a certain amount of caution.

We now proceed to speak of the cases in which its use is indicated.

Camphor, when employed at the very commencement of the attack, exerts a decidedly beneficial influence on that annoying complaint, "*a cold in the head*." Even when it fails to effect a cure it diminishes the pain over the forehead, and

restrains the sneezing and running at the nose. There are people who are subject to periodical fits of incessant *sneezing*, accompanied by a profuse watery discharge from the eyes and nose. For either of these complaints the patient should take from four to six drops of spirits of camphor (the weaker of the two preparations we have mentioned), in a little water, every fifteen minutes for the first hour, and subsequently hourly. In addition, he should snuff some powdered camphor up the nostrils, or inhale some spirits of camphor from a pocket-handkerchief.

Camphor is *par excellence* the remedy for *cholera* and *summer diarrhœa*. Four or five drops of essence of camphor (the strong preparation) should be given in a teaspoonful of brandy, every ten minutes, until the urgent symptoms are relieved, and should then be continued hourly. It usually at once checks the diarrhœa, prevents

cramps, and restores warmth to the extremities. It is very desirable that it should be given at the very commencement of the attack, every hour lost being of importance.

There are many forms of diarrhœa not allied to cholera, which are, nevertheless, readily controlled by camphor. Thus, it usually restrains the diarrhœa excited by the effluvia from bad drains, and the diarrhœa from which many women suffer whenever they happen to catch cold. The weaker preparation (spirits of camphor), administered in the doses we have indicated, answers admirably for these cases.

CANTHARIDES, OR SPANISH FLY.

There is no doubt that the Greeks used some insect for the purposes of blistering, but whether it was our Spanish fly is a point on which there is some difference of opinion. Some authorities have shown that it was the identical animal, whilst others have proved with equal clearness that it was a different kind of beetle altogether. It is really a matter of very little importance, for we know that cantharides is a powerful medicinal agent.



Fig. 5.—CAMPHOR.

The scientific name of the Spanish fly is *Cantharis vesicatorum*—rather a big name for so small a creature. They are procured in Russia and Siberia, but chiefly in Hungary. They seldom visit this country, except as an article of commerce, but some forty years ago they are said to have been for a time quite common in Essex and Suffolk. Their life is a short one—for it is stated that they live only eight or ten days. They swarm upon the trees about May or June, especially on the ash, lilac, and privet. They exhale a strong fœtid and penetrating odour, by which their presence is at once detected, and which is so offensive that the public walks are usually deserted until they have disappeared. They are readily caught, either early in the morning or in the evening, when they are not very active. Large cloths are spread under the trees, which are then shaken by men armed with long poles. The beaters usually cover their faces, and protect their hands with thick gloves. Various methods have been recommended for killing the beetles when caught, but the plan usually adopted is to plunge the cloths containing them into hot vinegar-and-water. They are then placed on hurdles covered with paper, and dried in the sun, or in a warm room.

They are from half an inch to an inch long, the wing-sheaths are of a beautiful green colour, and encase two thin brownish membranous wings. They should be preserved, if possible, in tightly stoppered bottles, but they are subjected to the ravages of no less than four different kinds of insects, by which they are rapidly destroyed, unless a little acetic acid, or camphor, or some similar substance, be added to keep away these unwelcome visitors. Spanish fly is not unfrequently adulterated—sometimes pieces of glass of the shape and colour of the beetle have been added to increase the weight, and sometimes the active principles have been extracted with ether, and the worthless residue sold as genuine.

Spanish flies produce a well marked effect when used either externally or internally. When applied to the skin they cause at first a sensation of heat, accompanied by pain, redness, and slight swelling, and this soon goes on to the formation of a blister.

Cantharides is not often administered with the view of committing murder or suicide, but several cases of accidental poisoning have occurred. On one occasion a man took a tea-spoonful of the powder flies by mistake for jalap. The case is also recorded of a coachman who poisoned a whole family by mixing tincture of cantharides with their beer, the only explanation he was able to afford being, that he thought it would be a “lark.” He was acquitted on the ground that he had no malicious intention. The law was shortly afterwards amended, and people are no longer permitted to play “larks” of that nature with impunity.

The symptoms produced by a poisonous dose of cantharides are usually very severe. At first there is a burning sensation in the throat, with great difficulty of swallowing, violent pain in the abdomen, with nausea and vomiting of fluid streaked with blood. Then there is great thirst and dryness of the throat; and after a time a heavy dull pain is experienced in the loins. There is an incessant desire to pass water, but only a little blood, or blood mixed with urine, is voided at each effort. Purging sometimes supervenes, being accompanied with griping and straining, the evacuations being mixed with blood. When the drug has been

administered in the form of powder, little shining particles can be detected in the vomited matter, and this usually leads to the discovery of the nature of the case. The treatment too frequently proves of no avail. When vomiting exists it should be promoted by warm demulcent drinks, such as thick linseed tea or strong gum and water, but if absent emetics and castor oil should be given—the object being, of course, to get rid of the poison. Olive oil was formerly regarded as an antidote, but it is now known that this is a ready solvent of the active principle of the poison, and that its use is injurious.

There are several preparations of cantharides, the majority, however, being solely for external application. Of these the blistering paper and blistering fluid are the most useful. When a speedy action is required the fluid must be used, and if applied freely it will usually produce a well-marked blister in from twenty minutes to half an hour. The paper is a much milder preparation, and may usually be applied for an hour without causing much more than redness and irritation of the skin, a result which in many cases proves as effectual as the blistering produced by the more energetic preparation.

Irritation of the skin, or counter-irritation as it is usually termed, is an extremely valuable mode of treatment in many diseases. It is employed in various morbid conditions of the deep-seated organs. Thus, in *inflammation of the lungs* the solution of cantharides lightly painted over the back will frequently lessen the pain and improve the condition of the patient, by subduing the accompanying restlessness. In *pleurisy* a blister applied to the chest often promotes the absorption of the fluid. Sometimes it serves to cut short an attack of *asthma*, and will relieve the shortness of breath accompanying *chronic bronchitis*. The blistering should never be severe, though it may with advantage be frequently repeated. The blisters, as soon as they form, should be covered with a layer of cotton wool. It is never necessary or advisable to open them, and should they burst they should be carefully protected, and on no account should any irritant be applied, with the view of keeping up the discharge. All the good they accomplish is done by irritating the skin, the subsequent draining of the fluid serving only to weaken the patient. In *neuralgia* of the face, or *tic*, as it is usually called, relief is speedily obtained by the application of a piece of blistering-paper, about the size of half-a-crown, behind each ear or to the temples. In neuralgia of the side left after shingles, a complaint not uncommon in elderly people, a blister often does good. Blisters are of the greatest service in *sciatica*. They should be applied every second or third day over the seat of the pain, and reaching down to the knee. In this complaint free blistering often succeeds when no benefit has been obtained from slight counter-irritation. The limb after the application should be swathed in a large sheet of cotton wool.

Blistering paper applied behind the ear often does good in *inflammation of the eye*. A similar mode of treatment is useful in *earache*.

Cantharides is the active ingredient in nearly all the preparations so extensively lauded for promoting the growth of the hair. It may be taken for granted that an application which is warranted to produce a heavy crop of whiskers on the smoothest face in the short space of six weeks contains cantharides. This drug, by acting as an

irritant, induces a determination of blood to the part, and in this manner may aid the development of the hair. Of course such a preparation should be used with caution. One might apply it to only one side of the face at a time, the other being used as a standard of comparison.

Administered internally, cantharides exerts a specific action on the urinary organs. It is a valuable remedy for *inability to retain the water*. This complaint is most frequently met with in young people. There are many women, however, especially middle-aged women, who suffer from a frequent desire to pass water. There may be nothing wrong with the urine itself, and the act of micturition may be unattended with straining or other trouble, there is simply an inability to retain the water for the proper length of time. Some people cannot help passing a little urine on the slightest exertion, even on sneezing or coughing, or laughing. These complaints are very distressing, particularly as from a feeling of delicacy they are too frequently not brought under the notice of the medical attendant. They are usually readily cured by cantharides, taken as indicated in Pr. 47.

CARBON, OR CHARCOAL.

Carbon, or charcoal, can be made either from wood or from the bones of animals. When made from wood it is known as *wood or vegetable charcoal*, whilst that procured from bones is called *animal charcoal* or *bone-black*. Wood charcoal is readily made by setting fire to a pile of wood, and then covering it with turf and ashes, so that from want of air it smoulders away instead of bursting into flame. The woods most usually preferred for this purpose are oak, beech, hazel, and willow. The wood charcoal thus prepared may retain the shape of the piece of wood from which it was formed, or it may be reduced to powder. Animal charcoal, or bone-black, is extensively prepared for the use of sugar refiners, and is made by heating bones to a red heat without access of air. Either form may be used medicinally. Carbon is quite insoluble in water, and fortunately belongs to that class of medicines which are destitute of smell or taste.

Carbon is usually taken with advantage in diseases and disorders of the stomach. It will often relieve the pain arising from *ulcer of the stomach*, although it cannot be supposed that it has the power of curing that complaint. People who suffer from *flatulence*, or *wind*, often derive very considerable benefit from its use. Carbon proves especially beneficial in cases in which after meals the "wind" is formed and discharged in very large quantities. It will often succeed in arresting this disagreeable condition, after almost every other remedy has been tried in vain. Either form of charcoal may be used, in doses of from half a tea-spoonful to a table-spoonful. It is often sold in the form of charcoal biscuits, of which two or three may be taken as a dose, and is sometimes made into lozenges. For the relief of flatulence it may be used with the greatest advantage at those times when the formation of wind is most troublesome. It is often given in combination with bismuth (Pr. 75).

Its power of absorbing deleterious gases into its pores has received other applications. It is often made into a poultice with bread and linseed-meal, and used as a dressing for foul-smelling ulcers and sores. Small flat muslin bags filled with

charcoal and placed in contact with disagreeably-smelling surfaces often make the confinement of the sick chamber less unpleasant both to the patient and to those who undertake the duties of nursing.

The disinfectant properties of charcoal have also been turned to account in the manufacture of respirators, which it was at one time hoped would serve to destroy the organic matters which propagate disease, and prevent their entrance into the system. Charcoal is frequently used as a tooth powder, the areca-nut charcoal being most esteemed for this purpose, on account of the hardness of its particles.

CARBONATE OF AMMONIUM.—*See* SAL VOLATILE, p. 879.

CARBONATE OF MAGNESIUM.—*See* MAGNESIUM, p. 832.

CASCARILLA.—*See* p. 875.

CASTOR OIL—CROTON OIL.

Castor oil is expressed from the seeds of the castor-oil plant, which is found native in almost all parts of the East and West Indies. In our gardens it never attains any great size, but in warmer climates the “palma christi,” as it is sometimes called, is a large well-formed tree. The croton-oil seeds must have been known from the most ancient times, for they have been found preserved with mummies at least 4,000 years old.

The oil is usually obtained by crushing the seeds, which are about the size of small beans, blunt at the extremities, of a light ash colour, and marked all over with dark spots and lines. The characters of this oil are well known; it is viscid, colourless, of a pale straw-yellow, and, if not rancid, has a flavour which is not very unpleasant. It does not solidify, even at the freezing point of water, but when exposed to the air slowly dries up into a kind of varnish.

It is a mild, speedy, and certain purgative, producing two or three motions with little straining or griping. It does not derange the digestive functions as stronger aperients do, and hence it is admirably suited for children, and people who object to have their digestive apparatus unnecessarily disturbed. Curiously enough, there are many people who imagine that unless a purgative gripes them it can by no possibility do them any good.

Castor oil is not a good purgative for habitual constipation, for it increases the torpidity of the bowels. In irritable diarrhoea, from the presence of indigestible matter, it forms an appropriate remedy. The dose for infants is a small tea-spoonful, for young children from one to two fluid drachms, and for adults from one to three table-spoonfuls. It may be taken floating on milk, or orange wine, or in beef-tea highly peppered and well salted, or it may be beaten up with an equal quantity of the froth of porter, and tossed off before the constituents have separated.

Croton oil is a very much more powerful and energetic drug than castor oil, and must be used with considerable caution. Dangerous symptoms have, in children, been produced by a single drop taken internally. We refer to it chiefly because it is occasionally mixed in small quantities with castor oil, and sold, usually in capsules, as “concentrated castor oil.” The seeds from which it is obtained are not unlike those of the castor-oil plant, but are smaller and duller in colour. They are so

powerful that even the dust arising from them in emptying the packages has produced copious purging. A year or two ago a number of these seeds were washed ashore near Waterford from a vessel which had foundered at sea, and were picked up and eaten by the country people, twenty-four of whom shortly afterwards suffered from symptoms of poisoning. When a person is insensible, in a fit, for example, and cannot swallow bulky purgatives, a single drop of croton oil placed on the tongue will serve to relieve the bowels. It must be washed down with a little castor oil, milk, or some other liquid.

CATECHU—KINO—RHATANY ROOT.

These substances are all three astringents, and their properties depend mainly on the tannic acid they contain.

Catechu is obtained chiefly from a climbing shrub, known as the "Gambier Shrub," a native of the East Indian Archipelago and Ceylon. The leaves are boiled in water until their astringency is all extracted, and the decoction is then thickened and cut into pieces to dry. It is usually obtained in tubes about an inch in diameter, which are porous, externally of a reddish-brown colour, and internally of an ochre-yellow or pale brick-red. There are, however, other varieties of catechu which do not present these characters. Thus, the black or acacia catechu is met with in brownish, irregular masses, often weighing many pounds. This variety is a great favourite in India, where it is known as "cutch," or "kut;" and formerly the term "Terra Japonica" was applied to it, on the supposition that it was an earth obtained from Japan. All kinds of catechu agree in one character, for they have all an extremely bitter, disagreeable, astringent taste.

Kino is the dried juice obtained from a lofty tree known as the "kino tree," growing in Ceylon and the adjacent parts of India. It is obtained from making incisions into the trunk of the tree, which is replete with a red watery juice which, as it exudes has the appearance of red currant jelly, but after a few hours' exposure to the sun dries into a brittle solid. It has no odour, but the taste is very astringent, and when chewed it tinges the saliva blood-red.

Rhatany root, or kramaria, as it is sometimes called, is the root-stock of a tree or large shrub which grows spontaneously in Peru. It is largely employed by the Spanish and Portuguese for improving the colour, astringency, and richness of red wines. A saturated infusion of the root in brandy is known as "wine colouring," and is said to be greatly valued for the deep, rich colour it imparts to port wine. The root has no odour, but the powder has a sweetish, astringent taste. Rhatany lozenges (Pr. 111) are useful in relaxed sore throat.

These three drugs are frequently employed for obstinate *diarrhœa*. The dose of the officinal tincture is in each case from half a tea-spoonful to a tea-spoonful in water. Half a tea-spoonful of tincture of catechu added to two table-spoonfuls of chalk mixture forms an efficacious, though extremely disagreeable, *diarrhœa* medicine.

CHAMOMILE.

The chamomile (*Anthemis nobilis*) is too well known to call for any detailed description. It grows wild in many parts of England, and it is a common object in almost every cottage garden.

It is a useful remedy in many complaints of women and children. It appears to exert a special influence over the disorders which attend the process of *teething*, and when administered to children does much to mitigate the fretfulness and peevishness from which they so frequently suffer at that important period of their existence. In the *diarrhoea* which often accompanies teething, and is usually characterised by *green, slimy stools*, chamomile proves useful, especially when given at the commencement of the attack. It is, of course, a perfectly harmless remedy, and is not to be placed in the same category as the so-called "teething powders." Chamomile effectually relieves the *cramps and pains in the legs* from which women frequently suffer during the last months of pregnancy. It frequently acts as a sedative to people who have been "upset," and made ill by *worry and vexation*.

CHARCOAL.—See CARBON, p. 787.

CHLORAL.

Chloral is a drug which, during the last few years, has obtained a great reputation for the treatment of all diseases in which pain or sleeplessness is a prominent symptom. It is a useful drug, although it must be admitted that it has not maintained its early reputation.

It is prepared by the action of chlorine gas on alcohol. It is generally met with in small colourless crystals, having a pungent and rather bitter taste, and an odour which has been compared to that of pears. It is soluble in water, and is often sold in solution.

The sleep produced by a moderate dose of chloral, say from ten to fifteen grains, is usually calm, refreshing, and dreamless. It is not profound, and the patient, when roused, will often take a hearty meal, then lie down again and at once resume his nap. It comes on sometimes in a few minutes, but more frequently in about half an hour after taking the dose. It should be given at bed-time, and the patient should remain quiet and avoid excitement, for otherwise it may produce restlessness instead of sleep.

The after effects of chloral are usually slight; sometimes it produces on the following morning a good deal of heaviness and sleepiness, and occasionally frightful dreams, excitement, intoxication, and delirium. As a general rule, however, it causes no giddiness, headache, nervous depression, constipation, sickness, or loss of appetite.

It is to be feared that the practice of taking chloral for every little ache and pain is greatly on the increase. Many ladies never think of travelling without it, and carry it in their dressing cases with as much carelessness as if it were so much eau-de-cologne. Perhaps the greatest objection to its constant use is that it is apt to

cause sudden death. Some two or three years ago an inquest was held on the body of a confirmed chloral eater, who was found in such a position as to show that he must have died whilst in the very act of stepping into bed. About the same time a gentleman in Canada was charged with the murder of his wife. He had been in the habit of taking chloral, in large doses, for some weeks. This was withdrawn suddenly. He then became irritable and unnaturally violent, and in a fit of passion, for some trivial cause, threw a petroleum lamp at his wife. Her dress caught fire, and she was burnt to death before his eyes. He had previously always been a most affectionate husband, and at the time of the commission of the act was, apparently, hardly conscious of what he was doing. The medical men consulted in the case stated that the long-continued use of chloral might produce a diseased condition of the brain, which, on the sudden withdrawal of the narcotic, might render a person temporarily irresponsible for his acts. People who, without medical sanction, habitually use chloral, should at once rid themselves of a dangerous and pernicious habit.

In cases of poisoning by an over-dose of chloral, the following treatment should be adopted :—

Treatment of Chloral Poisoning.—1. Send for a doctor, saying what is the matter. 2. Give the patient an emetic—such as a table-spoonful of mustard in a tumbler of tepid water—and promote vomiting by every means in your power. The emetic draught (Pr. 27) may be used for this purpose. 3. Keep the patient constantly moving about, and keep him warm.

Chloral is usually administered in the form of a syrup. Syrup of chloral is made by dissolving eighty grains of chloral in half an ounce of water, and then adding simple syrup to make it up to an ounce. Each drachm contains ten grains, and the usual dose of the syrup is from half a drachm to two drachms.

As we have already said, chloral is used to produce sleep, and for the alleviation of pain. Thus it subdues the *sleeplessness* of old people and the wakefulness induced by excessive mental exertion. The sedative draught (Pr. 37) may be employed. In *delirium tremens*, chloral not only removes the most prominent symptoms, but if given at the very commencement of an attack, often averts a serious illness. In this disease from twenty to thirty-grain doses may be given every four hours, and should the patient make any objection to taking his medicine, it may be administered in a glass of stout without fear of detection.

Chloral is now often used to cause sleep in *labours*, having for this purpose to some extent superseded chloroform. A drachm and a half of the syrup is given when the pains become very urgent, and the dose is repeated if necessary in twenty minutes. The patient becomes drowsy, and passes through her troubles almost without her knowledge.

CHLORATE OF POTASSIUM.—*See* NITRE AND CHLORATE OF POTASSIUM, p. 848.

CHLORIDE OF AMMONIUM.—*See* SAL AMMONIAC, p. 877.

CHLORODYNE.—*See* OPIUM, p. 869.

CIMICIFUGA.

This plant is the *Actæa racemosa*, or black snake root. It is an American importation, and grows abundantly in the open woods and on the hill-sides throughout the United States, from Canada to Florida. It is a herb from three to five feet high, bearing whitish flowers, and closely resembling in its main features our baneberry. It is also known as *Cimicifuga racemosa*.

The root is the only part used medicinally, and of this a tincture is prepared of the strength of four ounces to a pint of rectified spirit. The dose is five drops given every hour.

Actæa exerts its influence chiefly on the *womb*, and can be relied on for relief of symptoms depending on a disordered condition of that organ. It has the power of *restoring the periods* when they have been suddenly checked by cold, shock, or mental emotion, and it will also remove the pain in the head, back, and limbs which often accompanies this condition. It may be taken with advantage when the *periods are attended with pain* and general disturbance of the system. It will relieve the *pain under the left breast* which is as constant an indication of some disturbance of the womb as is the pain in the shoulder that the liver is out of order. It is also serviceable in that distressing *headache* from which many women suffer at each period, and particularly at the change of life. When the headache is also accompanied by severe aching pains in the eyeballs it is more especially indicated.

Many people are martyrs to the following complaint: The joints, which may be enlarged or not, are stiff and are racked with pain, which flits about from limb to limb in a manner which is infinitely more distressing than if it were to confine its attention wholly to one spot. It is aggravated by cold or wet, and is usually worse at night, so that the rest is much broken. In these cases the tincture of *actæa racemosa* should be tried, and its use is especially indicated when the sufferer is a female, and the symptoms can be traced to some previous derangement of the womb, as the sudden stoppage of the periods, a miscarriage, a painful or difficult labour, or the change of life.

Again, in cases of this description *actæa* is signally useful: The patient is first troubled with *rheumatic pains* in the joints, unattended with swelling; after a short interval the disease settles in one part, such as the wrist, or hand, the tissues become thickened, and the bones enlarged, till finally all movement is lost, and the member becomes useless. Warmth usually allays the pain, which is almost always easier at night. Instant relief is in these cases given by the drug now under consideration, even when everything else has been tried in vain.

CINCHONA.—See BARK AND QUININE, p. 768.

COD-LIVER OIL.

Cod-liver oil has long been used as a popular remedy in Sweden and other parts of Northern Europe. Nearly a century ago it was introduced into this country as a remedy for chronic rheumatism, but it is only during the last twenty-five years that

it has been so extensively employed, and has obtained such a wonderful reputation, in the treatment of consumption and other wasting diseases. Cod-liver oil is, or should be, the oil extracted from the fresh liver of the common cod, a fish which abounds on the coast of England, France, Iceland, and Norway, but especially off Newfoundland; other species of oil-yielding fish, such as the dorse, the ling, and the whiting, are, however, sometimes employed. The best English cod-liver oil is prepared as follows:—The livers are collected daily, so that decomposition may not have ensued, and after careful examination to remove all traces of blood and impurity, they are sliced and exposed to a moderate temperature till all the oil has drained away from them. This is filtered and exposed to a lower temperature to congeal much of the solid fat, which is then removed by filtration, the oil being put into bottles well secured from the action of the air. Other and rougher methods are sometimes adopted, by which inferior kinds of oil are obtained. Thus, on the coast of Newfoundland it is customary to use a number of tubs bored with holes at the bottom. The livers are piled upon a layer of fir twigs, and allowed to remain exposed to the sun and air until they undergo decomposition. The oil runs out through the holes in the bottom of the tubs into vessels placed beneath to receive it. Cod-liver oil obtained in this way is often brown, rancid, and nauseous. There are three different varieties of cod-liver oil, the pale, the light brown, and the dark brown. The pale is the officinal form, and is undoubtedly infinitely superior to either of the others. The difference in colour in the oils depends upon the circumstances attending the preparation, more particularly on the amount of heat employed, the state of freshness or putridity of the livers, and the length of exposure to the atmosphere. The dark brown oil is more impure than the other forms, and has a taste and odour which to most people are peculiarly disagreeable and offensive. Respecting the relative value of the different forms of oil in the treatment of disease, it may be stated that the evidence is entirely in favour of the pale variety.

The beneficial effects produced in different diseases by the administration of cod-liver oil have been ascribed to the minute quantities of iodine and phosphorus it contains. This is clearly a mistake, for equally good effects are not obtained from the use of these substances alone.

Cod-liver oil when first taken often excites nausea, vomiting, and disagreeable eructations, and occasionally the difficulty in overcoming the distaste for the medicine is almost insuperable. On the other hand, many people soon learn to like the oil, and look forward to medicine time with the utmost eagerness. Many an old consumptive will toss off his allowance of oil with as much gusto as other people exhibit after taking a glass of some rare old vintage.

There are several ways in which cod-liver oil may be given, for instance, floating on orange or ginger wine, or on a little weak brandy-and-water. A most excellent plan is to take it with the gentian and soda mixture (Pr. 14). The oil should be poured out on the surface of the medicine, so as not to touch the sides of the glass, and when taken in this manner it is almost destitute of taste.

The following are also convenient vehicles for the administration of the oil:—

1. Dilute phosphoric acid, half an ounce; tincture of cascarilla, one and a half

ounces ; syrup of ginger, one ounce ; compound infusion of orange-peel, to eight ounces. A table-spoonful with each dose of the oil.

2. Dilute phosphoric acid, half an ounce ; solution of strychnia one drachm ; tincture of orange-peel, one ounce ; syrup of ginger, one ounce ; compound infusion of orange-peel, to eight ounces. A table-spoonful with each dose of the oil.

A very good plan is to take the oil in stout. A glass of stout is poured several times from tumbler to tumbler till it is in a good froth. The oil is then carefully dropped on to the surface of the stout, where it will remain completely hidden by the froth. The stout can now be drunk at a draught without any indication of the presence of the oil.

It is a mistake to give large doses of cod-liver oil, for it is not absorbed, and passes off by the bowels unaltered. To commence with, a dose of a tea-spoonful even for an adult is quite sufficient, and it is very rarely necessary to take more than a table-spoonful at a time. Many people seem to think they cannot have too much of a good thing, and take the oil in absurdly large quantities. We knew a labouring man who for many months spent nearly half his wages in the purchase of cod-liver oil, without deriving the slightest benefit from his extravagance. The oil should be taken soon after meals.

Cod-liver oil is employed in the treatment of a vast number of diseases. It is of special service in *scrofula*, removing the various manifestations of the disease, such as *discharge from the ears and nose, inflammation of the eyes, strumous abscesses, &c.* In the treatment of *consumption* and other *wasting diseases* it is pre-eminently useful. Some of the happiest and most striking cases of arrested consumption are due to the judicious administration of this oil. It is also useful in other diseases of the lungs, such as *chronic bronchitis, asthma, &c.* Many obstinate *skin diseases*, dependent on a consumptive or scrofulous taint, get well under the use of cod-liver oil. In *rickets*, and other diseases of children, it is given with advantage. Many sufferers from *chronic gout* or *rheumatism* are benefited by the same treatment.

The Kepler "Solution of Malt and Cod-liver Oil" is an excellent preparation, and may be used with confidence in the treatment of consumption, scrofula, rickets, and other diseases. It may be obtained from any chemist.

COFFEE.

The coffee tree is generally regarded as a native of Arabia, but by some it is said to derive its name from Caffee, a province in Narea in Africa, where it grows in great abundance. It usually attains a height of from fifteen to twenty feet, and is covered with a dark green shining foliage. The trunk is erect, but seldom exceeds two or three inches in diameter. The flowers are white in colour, and diffuse a most delicious, harmless fragrance, in the midst of which the natives fix their habitations. The fruit, which contains the seeds, is something like a cherry, and is at first red, though it subsequently becomes purple. The coffee tree is frequently cultivated in this country, in hot-houses, as an ornamental evergreen, and, under favourable circumstances, will both blossom and mature its fruit.

It is evident that we are indebted to the Arabians for the use of this pleasant beverage, for the first rite of Eastern hospitality is the presentation of a bowl of

coffee. A curious story is told of its introduction to notice. It is said that in ancient times a poor dervish, who lived in a valley in Arabia, observed a strange hilarity in his goats on their return home every evening. To find out the cause of this he watched them during the day, and observed that they eagerly devoured the blossoms and fruit of a tree, which hitherto he had disregarded. He tried the effects of this food upon himself, and was thrown into such a state of exhilaration that the neighbours thought that the old gentleman had been making too free with the brandy-bottle. He revealed to them his discovery, and they agreed that Allah had sent the coffee plant to the faithful as a substitute for the forbidden wine. In Europe coffee is said to have been first used in Italy, and it appears to have been introduced into this country about the middle of the seventeenth century. Ordinary coffee is usually mixed with chicory, the roasted root of the wild endive. At first this substance was used only as an adulteration by fraudulent dealers, but the process gradually extended itself so widely, that the admixture has been legalised.

In many exhausting diseases "nutritious coffee" proves of value as a stimulant and article of diet. It is prepared as follows:—"Dissolve a little isinglass in water, then put half an ounce of freshly-ground coffee into a saucepan, with one pint of new milk, which should be nearly boiling before the coffee is added, boil both together for three minutes; clear it by pouring some of it into a cup, and dashing it back again, add the isinglass, and leave it to settle on the hob for a few minutes. Beat up an egg in a breakfast cup and pour the coffee upon it; if preferred, drink it without the egg."

Coffee is not only a valuable article of diet, but it is a therapeutical agent of no mean power. When coffee is used as a medicine it should be made very strong and taken in small quantities. It is frequently administered in cases of *opium poisoning*, with the view of warding off sleep. In *spasmodic asthma* it is an old-standing remedy. In many cases *café noir* proves extremely beneficial. It should be taken very hot and strong, and on an empty stomach. Asthmatics who derive benefit from it should not use it as a daily beverage, but reserve it for the time of an attack. In *nervous headaches* not dependent on a disordered stomach coffee is a valuable remedy. It nearly always effects a cure or affords palliation. In many forms of *neuralgia* it proves useful.

COLCHICUM.

Meadow saffron (*Colchicum autumnale*) is a native plant, growing abundantly in many of our moist, rich meadows. The leaves appear early in the spring, and the flowers late in the autumn, from which latter circumstance it has been called the harbinger of winter. Our supply is derived chiefly from Gloucestershire, but Hampshire and Oxfordshire not unfrequently furnish a fair quantity. In Scotland it is not by any means common. The flowers are of a pale purple or lilac colour, and so closely resemble those of the autumn crocus that an inexperienced observer might readily mistake the one for the other. The crocus, however, has only three stamens and one style, whilst the colchicum has six stamens and three styles. In many parts of the country the flowers are known as "naked ladies." The parts used for medicinal purposes are the seed and the bulb, or root, as it is commonly called. The

seeds, which should be collected when fully ripe, are about the size of black mustard seeds, odourless, and have a bitter taste. The bulb is as large as a chestnut, and of a somewhat similar shape. It is readily distinguished from the crocus and the bulbs of most other plants which resemble it by being solid and not composed of separate layers or shells like an onion. It should be collected in July. The preparation most commonly used for internal administration is the wine, which is made as follows:—"Macerate four ounces of colchicum corm, sliced, dried, and bruised, in a pint of sherry for seven days, with occasional agitation, press, and strain through calico, and then add sufficient sherry to make it up to a pint. This is by far the best preparation to keep for ordinary use. The dose is thirty drops three times a day, in a little water."

Colchicum is undoubtedly the most valuable remedy we possess for the treatment of *gout*. It is often stated that colchicum exerts its peculiarly beneficial effect on gout simply by purging the patient. This is not the case, for colchicum will often effect a cure when administered in doses far too small to have any purgative action; and, on the other hand, other purgatives may be given till the patient is well-nigh exhausted without his experiencing the slightest benefit. There are two ways in which colchicum wine may be given for gout—either frequently in moderate doses, say, thirty drops three times a day, or in one large single dose of a tea-spoonful. The large dose usually cures more quickly than the small, and when the patient is suffering much pain, and is extremely anxious to get rid of his enemy, it is better to employ this method. When, on the other hand, the patient has only "a little touch" of the gout, he can afford to use the smaller doses, and effect a more leisurely cure. The tea-spoonful dose of colchicum soon excites a feeling of warmth at the stomach, with a glow and outbreak of perspiration all over the body. The effect of this large dose is generally very rapid, for it will often remove the severest pain of gout in one or two hours, and very soon after the heat and swelling subside. It must be remembered, however, that colchicum is merely a palliative—that it eases the sufferer's pain for the time, but that it has no power to effect a permanent cure or to ward off future attacks. It may be given with bi-carbonate of soda (Pr. 33).

Not only in gout itself does colchicum afford relief, but its administration proves beneficial in almost all *complaints from which gouty people suffer*. Thus, if a gouty person is suffering from a bad cold, or from asthma, or from indigestion, or even from a skin disease, he will probably obtain more speedy relief from colchicum than from any other drug.

Colchicum less frequently effects a cure in *rheumatism* than in gout, though there are many *pains in the limbs and joints*, not gouty in origin, which are benefited by the drug. Five-drop doses of colchicum wine will not unfrequently cure that obstinate complaint called *crick in the neck*.

In using colchicum, the requisite number of drops of colchicum wine should be dropped into a glass, and taken with about two table-spoonfuls of water.

COLOCYNTH.

Colocynth is the fruit of the "Bitter Apple," a plant belonging to the family which yields us the melon, gourd, and cucumber. It grows abundantly in India

and on the shores of the Mediterranean. It is about the size of an orange, though somewhat lighter in colour, and is covered with a hard, thick rind. It is usually peeled before being sent to England, so that we receive only the white, spongy portion, which forms the pulp or pith. This is frequently used as a show specimen in chemists' windows, being met with in white balls, which are tough, but at the same time light and porous. The smaller variety of the fruit is considered the best, and is usually imported with the seeds removed.

Colocynth is a powerful purgative, producing copious watery evacuations. It is seldom given alone, from its tendency to cause griping, but is used to increase the action of other and milder purgatives. It usually operates mildly, certainly, and effectually. The "compound colocynth pill" is a favourite aperient, and may be given with safety in all forms of obstinate constipation.

CREAM OF TARTAR.—*See* EPSOM SALTS, p. 799.

CREASOTE.—*See* TAR AND CREASOTE, p. 888.

CROTON OIL.—*See* CASTOR OIL AND CROTON OIL, p. 788.

CUSPARIA.—*See* p. 875.

DIGITALIS.

This, our common "foxglove," is not only one of the most beautiful and conspicuous of our indigenous plants, but also one of the most valuable articles of the materia medica. It is so well known that it would be superfluous to enter into any detailed description of its characters. It grows wild in almost every county in England, Norfolk and Suffolk being the most conspicuous exceptions.

It would seem probable that both the Latin and English names bear reference to the shape of the flowers, although it is supposed by some that foxglove is a corruption of "foxes' glew" or "foxes' music," in allusion to an Anglo-Saxon musical instrument consisting of bells arranged on an arched support. All parts of the plant have at different times been used in medicine, but the leaves only are now officinal. As doubts have been expressed as to the activity of the cultivated varieties, it is advisable to use the wild plant if it can be as readily obtained. The roots collected in the autumn or winter of their first year are possessed of active properties, as are also the seeds. The leaves should be gathered when the plant is in its greatest perfection—that is just before or during the period of flowering, and those are to be preferred which are full-grown and fresh. They may be placed in baskets and dried in the sun, or gradually before the fire. They should be preserved in well-stoppered bottles covered externally with black paper, and kept in a dark cupboard. As they in time degenerate and lose their active properties, the supply should be renewed annually.

The preparations of the digitalis used in medicine are the tincture and infusion. The infusion is made by steeping thirty grains of dried foxglove leaves in half a pint of boiling water for an hour, and then straining. Digitalis is a powerful drug, and it is not by any means a matter of indifference of what strength the infusion is made. A young man recently nearly lost his life from the careless preparation and use of this drug. He filled a quart pitcher with the leaves of the foxglove, and

poured over them as much water as the jug would hold. At bed-time he took a tea-cupful of this strong infusion, and on the following morning a similar dose of the then still stronger infusion. He soon felt dizzy and heavy, began to stagger, then became unconscious, and had to be conveyed home. He vomited almost continuously, the vomited matter being of a grass-green colour, and on recovering consciousness he complained of excruciating pains in the bowels. His pulse was low, so low indeed that it was feared that every moment would be his last. Fortunately, however, he rallied, and under appropriate medical treatment was gradually, though very slowly, restored to health.

What to do in cases of Poisoning by Foxglove.—1. Send for a doctor. 2. Keep the patient lying down flat on his back. 3. Give frequent stimulants, such as hot brandy-and-water and sal volatile. As a rule, it is unnecessary to give an emetic, as the digitalis causes vomiting.

For medicinal purposes the fresh and well made infusion should be used in preference to the tincture. In all treatment the object should be to obtain the greatest possible effect by the use of the smallest possible dose of medicine. This is especially the case with a drug like digitalis, which may have to be administered for considerable periods of time, so that there might be a danger of its gradually accumulating in the system and producing untoward results. It is advisable in most cases in which the use of the foxglove is indicated to begin with half tea-spoonful doses of the infusion three or four times a day, and to increase the quantity gradually only when the drug appears to be losing its influence.

Digitalis is especially a heart remedy—a remedy that stands us in good service in cases of need. Sufferers from *giddiness, tendency to fainting, breathlessness on exertion, and palpitation of the heart*, will do well to take the infusion of foxglove in the cautious manner we have indicated.

When this condition is also attended with anæmia (paleness, or poorness of the blood) the digitalis may be advantageous, combined with an iron mixture. In Pr. 8 we have the formula for such a combination.

Digitalis is one of our best remedies for *dropsy*, whether dependent on Bright's disease or on some affection of the heart. It greatly increases the flow of urine, and in this manner drains off the fluid from the limbs. Half tea-spoonful doses of the freshly prepared infusion will usually be found efficacious. It is not as a rule desirable to continue the medicine after the swelling has subsided.

Digitalis is a useful remedy for *spermatorrhœa*, although in the majority of cases bromide of potassium, as already recommended, is to be preferred. The infusion of digitalis may be taken in tea-spoonful doses three times a day for a week. Strict attention must be paid to the general health. For treatment, see DEBILITY, p. 210.



Fig. 6.—DIGITALIS.

The foxglove is useful in headache when *confined to the forehead*, and of a *heavy throbbing character*; five or ten drops of the infusion every hour.

DOVER'S POWDER.—See OPIUM, p. 869.

EASTON'S SYRUP.—See IRON, p. 821.

EPSOM SALTS, AND OTHER SALINE PURGATIVES.

From the mildness and safety of its operation, its ready solubility in water, and its cheapness, sulphate of magnesia, or Epsom salts, was for many years the most commonly employed purgative, both by the public and their doctors, although its popularity is now apparently somewhat on the wane. Its most familiar name is derived from its original discovery in 1675 in a spring at Epsom. Epsom has lost much of its original reputation as a watering-place, although a good many people still make a pilgrimage in that direction about the last week in May.

Sulphate of magnesium is now usually procured from dolomite or magnesia limestone, which is used for building purposes, and occurs in different counties in England in quantities sufficient to purge the whole human race for centuries to come. The characters of Epsom salts are known to most of us. It occurs in minute colourless transparent crystals, having a nauseous bitter taste. Some people have really a liking for Epsom salts, and will take it in any form, even spread on bread and butter.

As a mild and efficacious purgative it is useful in all cases in which something stronger than a mere laxative is required. It should be taken fasting, preferably before breakfast, and largely diluted with water. The ordinary dose is from a quarter of an ounce to an ounce, but some people have apparently an unlimited capacity for Epsom salts, and can take it *ad libitum*.

The white mixture (Pr. 25) contains both Epsom salts and carbonate of magnesia.

Sulphate of magnesium enters largely into the composition of many of our popular purgative waters, more especially the Pullna and Friedrichshall.

A salt which in its purgative properties closely resembles Epsom salts is sulphate of soda, or Glauber's salts. Large quantities of it are formed as a residue in the manufacture of hydrochloric acid (spirit of salt) from common salt. It is an essential constituent of the Cheltenham and Leamington waters, and is also found in Carlsbad salts. The dose is from a quarter of an ounce to an ounce, but it is not very often used, as its taste is even more nauseous than that of Epsom salts.

Acid tartrate of potassium, or cream of tartar, is another member of this group. In the fermentation of wine a crystalline crust is deposited on the sides and bottom of the casks, and is known as "argol," or, according to its colour, as red or white "tartar." It is dissolved in water, and during the ensuing process of evaporation the purest crystals are skimmed off the top, forming "cream of tartar," the substance now under consideration. Its dose as a laxative is from four to six drachms, but it is usually administered in combination with other drugs—for example, in the form of compound jalap powder, or as confection of sulphur.

Prepared from cream of tartar is tartarated soda, or "Rochelle salt," so called from having been discovered by an apothecary of that city. It is a mild aperient, and often acts as a good supplement to stronger purgatives. It enters into the composition of the Rochelle draught (Pr. 26), and the ever-popular Seidlitz powder, which contains in the blue paper carbonate of soda 40 grains, and Rochelle salt 120 grains; and in the white paper, tartaric acid 37 grains.

ERGOT.

Ergot is a diseased condition of the seed or grain of the rye and some other plants, caused probably by the presence of a fungus. When the rye undergoes this change it is known as "spurred rye." It is seldom that the whole of the ear of the rye is affected, usually a few only of the grains suffering. The ergotised grains retain very much the shape of the ordinary undamaged grains, except that they are a little curved, and often cracked. They are of a deep purple or brown colour, and are covered more or less by a bloom. They are readily broken across, and the interior will be found to be whitish, or of a pink colour. The odour in each individual grain is hardly detectable, but in considerable quantities it is distinct and somewhat disagreeable.

There are two preparations of ergot in ordinary use for medicinal purposes, the liquid extract and the infusion. The former is a very efficient and reliable preparation, but in many cases of labour, where it is important to obtain the full action of the drug, it is better to use the freshly-prepared infusion. This is made as follows:—A drachm of the powdered ergot is thrown into a tea-cupful of boiling water, and allowed to stand on the hob for five minutes, with occasional stirring. It may be sweetened to taste, and should be taken in two doses, half at a time, the grounds and all being swallowed. It is very important that the drug should be fresh, and it should be always kept in a tightly-stoppered bottle. Many medical men, who are liable at any moment to be called away to attend a case of midwifery, find it advantageous to carry the powdered ergot wrapped in leaden paper in their pocket-book or instrument-case.

Ergot exerts its influence chiefly on the womb, and care must be taken not to administer it to pregnant women, for fear of producing a miscarriage. In cases of labour the delivery of the child is often facilitated by the administration of ergot, but caution is requisite in its employment, and it should be given only under the superintendence of a medical man. In first labours and cross births its administration is inadmissible, and in the latter case its injudicious use may prove speedily fatal to both mother and child. In *flooding* it often proves of inestimable value, and by its agency many lives have been saved, when recovery appeared almost hopeless. It is best to give a half tea-spoonful dose of the liquid extract of ergot at once, and not to lose time in making an infusion. For its use in diabetes, *see* p. 225.

EXTRACT OF MALT.

The Kepler Extract of Malt has long enjoyed a high reputation in Germany, Switzerland, and America, and is now largely employed in this country. The malt

is not fermented, so that it contains no alcohol, and is free from intoxicating properties. One of its chief constituents is malt sugar, a most valuable aid to digestion. It improves the powers of assimilation, and in *consumption*, *bronchitis*, *scrofula*, *rickets*, and many of the *wasting diseases of children*, it proves highly beneficial, an improvement being quickly noticed. It has a sweet, agreeable taste, and is taken without difficulty. The best way is to begin with a tea-spoonful twice a day with meals, but the dose will be speedily increased to a table-spoonful or more. It may be taken alone from the spoon or mixed with a little milk or milk and soda-water. The Kepler "Solution of Malt and Cod-liver Oil" is also a good preparation.

FERN ROOT—SANTONINE—POMEGRANATE—SPIRITS OF TURPENTINE.

These substances are used in medicine chiefly for the destruction and expulsion of the different kinds of worms which infest the human body.

The male shield-fern (*Aspidium felix mas.*) is one of the commonest of our British ferns. It is found in woods and shady situations, and on moist banks in many parts of the country. The root should be collected in July, August, or September, and after the removal of the black portions, fibres, and scales, it should be dried and powdered, and then preserved in stoppered bottles. It is made into a liquid extract with ether, and in this form is administered for the expulsion of the tape-worm. It is contained in the tape-worm draught (Pr. 35).

Santonica belongs to the same genus of plants as the wormwood or absinth. It is obtained chiefly from the Levant, the unexpanded flowers being imported in large quantities. These flowers in general appearance closely resemble seeds, and have a strong odour and a bitter camphoraceous taste. They yield a white crystalline principle, known as santonine, in which form the medicine is usually given. Patients who have been taking it for any length of time often see everything tinged yellow or green. It proves very efficacious in the treatment of thread-worms, but is inoperative in expelling the tape-worm. Santonine may be conveniently mixed with sugar, so as to form a powder, as in Pr. 79. One of these is the dose for a child of from two to ten years of age; for an adult two should be given. It may be necessary to repeat the dose on two or three consecutive days. Sometimes it is advantageous to give the santonine dissolved in a tea-spoonful of castor oil instead of in powder. It is occasionally made into lozenges, or into little cakes resembling ginger-bread, the more readily to impose on the infant mind.

One of these powders, or even a half or a quarter of a powder, given at bed-time often proves successful in arresting the tendency exhibited by many children to wet the bed. This method of treatment may succeed even when others have been tried in vain.

The pomegranate (*Punica granatum*) is a native of the south of Europe, of Arabia, Persia, and Japan. It was well known to both the Greeks and the Romans, and is frequently mentioned in the Bible. It is largely grown in India and Ceylon, chiefly for the sake of its fruit. It frequently attains a height of from eighteen to twenty feet, and bears large flowers of a beautiful rich scarlet colour. It blossoms

luxuriantly, even in this country, but here the fruit is seldom obtained in perfection. In its native countries the fruit is as large as an orange, and the juicy rose-coloured pulp which it contains proves very grateful to patients suffering from the distressing thirst of fever. The flowers and the rind of the fruit were employed by the ancients for their astringent properties, and are still used in India in the treatment of diarrhœa and dysentery. The Chinese, Hindoos, Greeks, and Romans have from time immemorial regarded the bark of the root as a specific for tape-worm. They direct the maceration of two ounces of the bruised bark of the fresh root for twenty-four hours in two pints of water, which is then boiled down to one-half, strained, and divided into three doses, which are to be taken at half-hour intervals. Vomiting often ensues, but this should not prevent the administration of the whole quantity. The treatment should be repeated daily for four or five days. In this country we usually obtain the dried root imported from the south of Europe, and it must be admitted that it not unfrequently fails.

Oil of turpentine, or spirits of turpentine, is a clear colourless fluid obtained by distillation from the crude turpentine which exudes from the trunks of different species of pine.

It is very efficacious in the treatment of the tape-worm, nearly always killing the animal before expelling it. When used for this purpose it should be administered in one dose of two or three tea-spoonfuls, which may be given in milk. It usually acts as a purgative, but as it is in this respect somewhat uncertain, it is better to combine it with a little castor oil. A full dose of turpentine, if not quickly expelled from the system by purging, is apt to produce excitement, giddiness, and confusion of sight—in fact, a condition closely allied to intoxication.

Turpentine has, however, other uses irrespective of its power of destroying worms. It is a valuable remedy for bleeding of all kinds, whether it be from the stomach, bowels, lungs, nose, womb, kidneys, or bladder. It is very conveniently given in five-drop doses, frequently repeated, but when the symptoms are very urgent it is better to administer it in one large dose of half a tea-spoonful or even more. It probably exerts some special influence over the kidneys, for the urine of patients taking this remedy acquires an odour which is compared by some to that of violets, and by others to mignonette. Large doses often cause the urine to become bloody, but this soon disappears on discontinuing the use of the drug.

FRIAR'S BALSAM—BALSAM OF PERU—BALSAM OF TOLU.

There are several substances used in medicine known as balsams. Thus we have the balsam of Peru and the balsam of tolu, both having very similar properties.

The balsam of Peru is obtained from a lofty tree growing in Central America. In the first place, the bark is bruised by striking it with the back of an axe, so as to promote its separation. In a few days it is charred by placing a lighted torch in contact with it, with the view of increasing the flow of the balsam. In a week or ten days the bark drops off, or is, at all events, so loose that it can be readily detached. Rags are inserted in apertures and crevices in the tree, and soon become saturated with balsam. They are then removed and boiled, the balsam being

skimmed off the surface of the water. Thus obtained, it forms a thick, viscid, almost opaque substance, somewhat resembling treacle.

Balsam of tolu is procured by making incisions in a lofty evergreen tree, a native of New Granada. It is a soft tenacious solid, having a fragrant balsamic odour, and somewhat resembling in appearance the balsam of Peru.

Both these substances were at one time extensively employed as application to ulcers, cuts, wounds, and abrasions. It was argued that, as they promoted the union of external surfaces, they might be used with advantage for many diseases of the internal organs. The argument may not have been a sound one, but, nevertheless, both balsam of Peru and balsam of tolu act beneficially in some cases of *chronic bronchitis* and *winter cough*.

Balsam of Peru is best administered in doses of about half a drachm, made into an emulsion with mucilage or yolk of egg. The syrup of tolu, in tea-spoonful doses, is frequently used as a flavouring agent for cough mixtures.

Benzoin is obtained by making incisions in the bark of the Benjamin tree, growing in Sumatra, Borneo, and other islands of the Eastern Archipelago. The compound tincture of benzoin, or Friar's balsam, is an old favourite, and is known by a variety of names. Thus it is called indifferently "Tincture of Benjamin," "Balsam for Cuts," "Jesuit's Drops," and "Commander's Balsam." It is made as follows:—Macerate two ounces of benzoin in coarse powder, one and a half ounces of prepared storax, half an ounce of balsam of tolu, and one hundred and sixty grains of Socotrine aloes, in one pint of rectified spirit for seven days, with occasional agitation, then filter and add more spirit to make one pint of the tincture.

As everybody knows, a piece of soft rag soaked in this preparation forms excellent protective for cuts and sores. Internally it is taken in tea-spoonful doses, beaten up with milk, usually for bronchial affections and old-standing winter coughs. The inhalation (Pr. 105), made by adding a tea-spoonful to a pint of hot water, is an excellent remedy for coughs and colds of all kinds.

GALLIC ACID.—See OAK-BARK, &c., p. 853.

GENTIAN.

The yellow gentian (*Gentiana lutea*) grows abundantly on the Alps of Switzerland and Austria, on the Apennines and Pyrenees, in the mountainous forests of many parts of Germany, and in North America. It thrives well in this country in a deep, rich loamy soil, and flowers about the end of June or the beginning of July, few plants being more stately and ornamental. The flowers are large and



Fig. 7.—TOLU.

handsome, and yellow in colour, and are placed in whorls upon long stalks. The name of the genus was, it is said, conferred in commemoration of Gentius, a king of Illyria, who lived many years before Christ, and discovered the virtues of the plant.



Fig. 8.—GENTIAN.

The portion of the plant used in medicine is the root, which is imported from Marseilles and other French ports. It is met with in long cylindrical pieces, wrinkled longitudinally, and often twisted. They have a sweet odour, and bitter taste, are brown externally, and yellow and spongy within. There are four official preparations of the drug—an extract, a mixture, a tincture, and a compound infusion—all of which, with the exception of the extract, contain some other bitter. Thus the infusion contains, in addition to the gentian, orange-peel and lemon-peel; the mixture contains orange-peel and coriander-fruit; and the tincture, orange-peel and cardamoms. The extract is often used as a basis for tonic pills, and the other preparations are used as bitters, either alone or in combination with acids or alkalies. The dose of the tincture is from half a tea-spoonful to a tea-spoonful, and of the infusion and mixture from two to three table-spoonfuls. It will be remembered

that the compound infusion enters into the composition of our gentian and soda (Pr. 14), gentian and acid (Pr. 15), and gentian and senna (Pr. 16) mixtures. Gentian is one of our best stomachic tonics, and is used to *increase the appetite and promote digestion*. It should be given about half an hour before meals.

GUAIAACUM.

Guaiacum has at different periods of its career enjoyed a high reputation for the cure of many diseases, but it must be confessed that in reality it is a drug of no great value. It is the wood of a tree, some thirty or forty feet high, growing in Jamaica and the warmer parts of America. We usually see it in the chemists' shops in logs or billets, which are readily recognised from the central portion being almost black, and the surrounding wood of a much lighter colour. It is generally known as *lignum vitæ*—wood of life. It is very hard and heavy, and is frequently used for making rulers, skittle-balls, and other similar articles. The black central portion contains a large quantity of resin, which is obtained by allowing it to exude from the living trunk of the tree. The best way in which to take this drug is as the ammoniated tincture of guaiacum, which is a solution of the resin in sal volatile. It should be taken in tea-spoonful doses in about half a tumblerful of milk three or four times a day. It may be employed



Fig. 9.—GUAIAACUM.

with advantage in many kinds of *chronic rheumatism*, particularly in that form in which the symptoms are relieved by warmth. Rheumatism is such an obstinate complaint that any drug which will afford us even a chance of doing good should be thankfully received.

GELSEMINUM, OR GELSEMIUM.

This, the yellow jessamine, field jessamine, or woodbine (*Gelsemium semper-virens*), is a native of America, and is one of the most beautiful climbing plants of the Southern States. It ascends lofty trees, forming festoons from branch to branch, and in its flowering season, in the early spring, scents the atmosphere with its delicious odour. It belongs to the Loganiaceæ or nux vomica family, and is not in any way related to our common garden jessamine. It is extensively cultivated as a garden plant in many parts of America, not only for the beauty of its flowers and their rich perfume, but from the rapidity of its growth and the shade it affords. It begins to blossom early in March, and remains in flower until the end of May. It is not grown in England, and a specimen now at Kew is, we believe, the only one in this country. The portion of the plant used for medicinal purposes is the root, which is several feet in length and often an inch or more in diameter. It is doubtful whether the leaves possess any medicinal properties, and a tincture prepared from the flowers is comparatively inert.

Gelseminum was first used as a remedy for fever. It was introduced into practice by a curious accident. A planter of Mississippi, whilst labouring under a severe attack of bilious fever, which resisted all the usual remedies, sent a servant into his garden to procure a certain medicinal root and prepare an infusion of it for him to drink. The servant by mistake collected the root of the yellow jessamine and gave an infusion of it to his master, who in a short time became so completely paralysed that he was unable to move a limb or even to raise his eyelids, although he could hear and was cognisant of circumstances passing around him. His friends, greatly alarmed, collected about his bed, waiting the result with much anxiety, and expecting every minute to see him breathe his last. After some hours he gradually recovered, and was astonished to find that his fever had left him.

Curiously enough, cases of poisoning by gelseminum are in America by no means uncommon. A few years ago a medical man purchased five barrels of tincture of gelseminum, and was on his way home, when the vessel grounded on a sand bar on the Ohio river. In the process of shifting the freight the barrels were brought on deck, and in the hurry and confusion remained there unnoticed. During the night, however, the sailors, supposing it to be whisky, tapped a barrel and drew off a bucketful, which they commenced drinking out of tin mugs. In the morning they were all found lying perfectly helpless, and unable to move even a finger. It was for a time supposed that they were dead, but an appeal to the doctor decided the nature of the case, and by a judicious administration of stimulants they all ultimately recovered. The activity of the drug depends upon the presence of a body known as *gelsemine*. It is a powerful poison, and in one case it was estimated that the quantity which caused death did not exceed a sixth of a grain. It exerts its influence chiefly on the muscles of respiration, and it has been found by experiments on

animals that in cases of poisoning by this substance recovery will nearly always take place if artificial breathing be maintained until the drug is eliminated from the system.

The preparation of gelseminum most commonly used is a tincture composed of one part of the plant to four of rectified spirit. It may be obtained from any chemist. The dose for an adult is from ten to twenty drops every three or four hours. If the medicine is continued several days, the smaller dose should be given; Pr. 41 may be employed with advantage. In larger quantities it is apt to produce pain over the brows, dimness of vision, and giddiness. Gelseminum may sometimes be substituted for aconite with advantage in the treatment of fever. It is said to be best adapted to the *simple fever* of childhood. When quinine is not obtainable it has been sometimes used with success in the treatment of ague.

It has obtained a great reputation in the treatment of *neuralgia* of the jaw. It is particularly useful in these cases when the complaint depends on the presence of a decayed tooth. In simple acute *toothache* it may be both given internally and applied locally.

In deep-seated *rheumatism* considerable success has attended its employment, but we are unable at present to say what are the indications for its use.

Taking it all in all, it is a most valuable remedy.

GREGORY'S POWDER.—*See* RHUBARB, p. 877.

GREY POWDER.—*See* MERCURY, p. 838.

GRIFFITH'S PILLS AND MIXTURE.—*See* IRON, p. 820.

GLYCERINE OF TANNIC ACID.—*See* p. 855.

HAMAMELIS VIRGINICA.

This is the witch-hazel, a plant some ten or twenty feet high, growing abundantly in nearly all parts of North America. It is usually met with in stony places on elevated ground, and frequently on the banks of streams and borders of swamps.

In former times popular opinion attributed to it extraordinary powers of divination. In Michigan it is said to be still used for finding out hidden springs, and is likewise relied on for the discovery of treasures, mines, &c.

It is well known that hamamelis was held in the very highest estimation by the Indians, and there can be no doubt that it is of considerable value as a curative agent.

Hazeline (Pr. 103) is a purified extract of hamamelis, and is a reliable preparation. It is used largely for arresting *bleeding*, and proves equally efficacious, whether the blood comes from the nose, lungs, stomach, bowels, or other organ. It is especially indicated when the blood comes up easily, and the bleeding is not attended with any expulsive effort.

It has been used with success in cases of *dysentery* when there is much blood in the motions.

Hamamelis, in addition to its styptic properties, appears to exert a special

influence on the veins; when administered internally it eases the pain of *varicose veins* of the legs, and when the internal administration is supplemented by its external application as a lotion, the veins gradually become smaller and smaller, and after a time resume their natural size. This statement is startling, but it is true.

In the treatment of *bleeding piles* hamamelis is one of our best remedies—it is A1. For *hæmorrhoids*, or *piles*, it is almost a specific. A drop or two of the tincture should be administered in a little water every two or three hours, or a smaller dose may be given more frequently. This quantity should not be exceeded, for large doses often produce throbbing pains in the head; Pr. 45 or 103 may be employed. For varicose veins and piles it is necessary to apply it externally as well, and for this purpose recourse may be had to the hamamelis lotion (Pr. 95). For varicose veins the lotion should be applied on a piece of lint covered with a larger piece of oil-silk to prevent evaporation, and the whole limb should then be carefully bandaged. A hamamelis cerate, or ointment, is now made, which in the case of piles may be sometimes used as a substitute for the lotion.

HAZELINE.

Hazeline is an extract or aqueous distillate prepared from the fresh bark of the American witch-hazel (*see above*). It is a clear pellucid fluid having an agreeable odour and pleasant taste, and is the best form in which to administer hamamelis. It has the power of controlling in the most marvellous manner bleeding from all parts of the body, especially from the lungs, stomach, and bowels. It is the best remedy for piles. It is also recommended in the treatment of all forms of catarrh. For catarrh of the nose or chest it should be used in conjunction with a “Burrough’s Chloride of Ammonium Inhaler.” Used as an injection it is an excellent remedy for leucorrhœa or “whites.” It is given with advantage in the treatment of miscarriage and in certain painful conditions of the womb. It should be taken internally in doses of fifteen or twenty drops every three hours in a wine-glassful of water. As an injection it must be diluted with an equal quantity of water and used freely. For piles it may be applied on lint without dilution. As a local application or dressing to ulcers it is excellent, and in the treatment of wounds, sprains, bruises, or contusions, is far superior to arnica. It is not poisonous, and may be given to children with perfect safety. It has come largely into use of late, and is now sold by all chemists under the name of “Burrough’s Hazeline.”

HEMLOCK.

The common spotted hemlock (*Conium maculatum*) is a tall umbelliferous plant, a native of Britain, and is found growing by the roadsides and hedges, and in waste places. It is distinguished from all other plants which it resembles by its tall smooth, spotted stem, its smooth leaves, the rugged edge of the five ribs of its fruit, and its peculiar mousy odour. The only other native plant belonging to this natural order having a spotted stem is covered with hairs. Cases of poisoning with hemlock are not uncommon, particularly on the Continent, the root being mistaken for fennel, asparagus, or parsnip. The leaves of hemlock have been occasionally substituted for

parsley, although, considering their slight resemblance, it is difficult to see how the mistake could have arisen. Such mistakes are frequently attended with disastrous results. Not long ago several French soldiers, wishing to improve the flavour of their soup, threw into the pot a quantity of hemlock leaves chopped fine. One of them, who partook rather freely of the *pot-au-feu* he had helped to prepare, became senseless in less than two hours, and died an hour later, his face being so livid that he looked as if he had been strangled. His companions, who had been more abstemious, or whose appetites had been less keen, ultimately recovered, although for many hours they all appeared to be intoxicated.

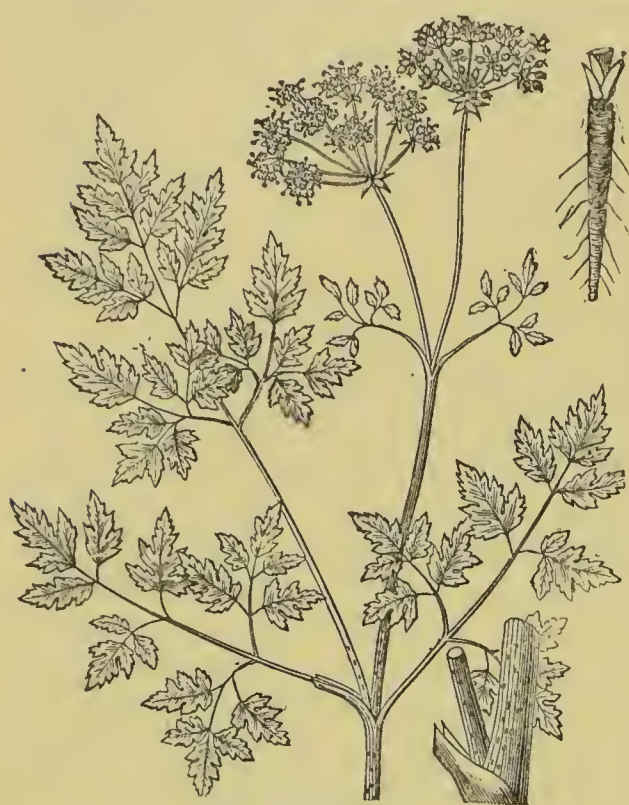


Fig. 10.—HEMLOCK.

Hemlock derives considerable historical interest from having been the state poison of ancient Athens, and the instrument of Socrates' death. The account, as narrated by his friend and disciple, Plato, of the last moments of the philosopher, and of the heroic calmness and resignation with which he met his fate, is of touching interest.

"And Crito, hearing this, gave the sign to the boy who stood near. And the boy departing, after some time returned, bringing with him the man who was to administer the poison, who brought it ready bruised in a cup. And Socrates, beholding the man, said, 'Good friend, come hither; you are experienced in these affairs, what is to be done?' 'Nothing,' replied the man, 'only when you have drank the poison, you are to walk about until a heaviness takes place

in your legs; then lie down: this is all you have to do.' At the same time he presented him the cup. Socrates received it from him with great calmness, without fear or change of countenance, and regarding the man with his usual stern aspect, he asked, 'What say you of this potion? Is it lawful to sprinkle any portion of it on the earth as a libation or not?' 'We only bruise,' said the man, 'as much as is barely sufficient for the purpose.' 'I understand you,' said Socrates, 'but it is certainly lawful and proper to pray the gods that my departure from hence may be prosperous and happy, which I indeed beseech them to grant.' So saying, he carried the cup to his mouth, and drank it off with great promptness and facility.

"Thus far most of us had been able to refrain from weeping; but when we saw that he was drinking, and actually had drunk the poison, we could no longer restrain our tears. And from me they broke forth with such violence that I covered my face and deplored my wretchedness. I did not weep for his fate so much as for the loss of a friend and benefactor, which I was about to sustain. But Crito,

unable to restrain his tears, was compelled to rise. And Apollodorus, who had been incessantly weeping, now broke forth in loud lamentations, which infected all who were present except Socrates. But he, observing us, exclaimed, 'What is it you do, my excellent friends? I have sent away the women, that they might not betray such weakness. I have heard that it is our duty to die cheerfully, and with expressions of joy and praise. Be silent therefore, and let your fortitude be seen!' At this address we blushed, and suppressed our tears. But Socrates, after walking about, now told us that his legs were beginning to grow heavy, and immediately lay down, for so he had been ordered. At the same time the man who had given him the poison examined his feet and legs, touching them at intervals. At length he pressed violently upon his foot, and asked if he felt it, to which Socrates replied that he did not. The man then pressed his legs, and so on, showing us he was becoming cold and stiff. And Socrates, feeling it himself, assured us that when the effects had ascended to his heart he should then be gone. And now the middle of his body growing cold, he threw aside his clothes, and spoke for the last time, 'Crito, we owe the sacrifice of a cock to Æsculapius. Discharge this and neglect it not.' 'It shall be done,' said Crito; 'have you anything else to say?' He made no reply, but a moment after moved, and his eyes became fixed. And Crito, seeing this, closed his eyelids and mouth."

It will be noticed that the symptoms of poisoning do not quite correspond with those described in the French soldiers who put hemlock in their soup. It is probable that the activity of the plant depends greatly on the season in which it is gathered, and on the soil in which it is grown. We are informed, on the authority of a Russian botanist, that peasants of his country eat the plant with impunity after it has been boiled several times in water, although why they should eat it at all we are not told.

The only reliable preparation of hemlock is the prepared juice, known technically as *succus conii*. Some years ago the hemlock was vaunted as an internal remedy for *cancer* and all kinds of tumours. The encomiums bestowed upon it led to its universal adoption, but time, the greater leveller, has proved that, however benignly it sometimes acts when first administered, we cannot attribute to it virtues of so conspicuous and valuable a nature. At the same time, the pain of cancerous ulcers in the neighbourhood of the womb is often relieved by the use of conium, although frequently these effects are temporary, and the drug must be viewed only in the light of a valuable palliative.

In *St. Vitus's dance* conium may be used when other means of treatment have proved unsuccessful.

In the early stage of *shaking palsy*, when only one limb is affected, and the body is not weakened by disease and suffering, it may bring relief.

The hemlock juice should be given in tea-spoonful doses three times a day, the dose being, if necessary, gradually increased to twice that quantity. The indications that the patient has had enough are drooping of the eyelids, sluggish movements of the eyeball, laziness of vision, with giddiness and weakness of the knees. Until these symptoms are produced the drug often fails to do any good, but their presence is to be regarded as an indication that it will not be necessary to repeat the dose for from twelve to twenty-four hours. Conium is in many respects allied to gelseminum.

HENBANE.

Common henbane (*Hyoscyamus niger*) grows wild in many parts of our island, particularly on the coast of Essex and Kent. The English name has obviously reference to the injurious effects of the seeds on fowls. The whole plant has a strong fetid narcotic smell, and abounds in a clammy juice of a similar odour. The root has a sweetish taste—a circumstance which has caused it to be mistaken for parsnip. In its medicinal properties hyoscyamus corresponds in many respects to belladonna

and stramonium. It is used chiefly as a substitute for opium, when the latter cannot be taken, or when its administration is undesirable. As a single dose for the relief of pain, from one to two tea-spoonfuls of the tincture may be taken. Henbane is often added to purgative drugs to prevent them from griping. It enters into the composition of the calomel pill (Pr. 61).



Fig. 11.—HENBANE.

HYDRASTIS.

The *hydrastis canadensis*, or golden seal, is a drug of American origin. It is a herb about a foot high, usually bearing two large leaves and a solitary flower. The root is the part used medicinally, and of this a tincture is made by treating one part with four parts of rectified spirit.

It is a tonic, and is used in the treatment of *indigestion*.

In simple *constipation* it may be given with advantage.

Its internal administration and local application have been recommended in *cancer of the breast*, but respecting the benefits obtained from this method of treatment there is considerable diversity of opinion. It is said to relieve pain and improve the general health, and in some cases such beneficial effects have followed its use that a projected operation has been abandoned. In cancer of the womb it has proved useless. It should be borne in mind that even if no benefit is obtained from its use, it cannot possibly do any harm. The tincture should be given in drop doses every hour. It often does good in *piles*, and then the internal administration should be combined with the use of the lotion (Pr. 96), applied freely on lint, and renewed frequently.

INDIAN HEMP.

The Indian hemp (*Cannabis indica*) is essentially the same as that so largely cultivated for the sake of its fibre. It was at one time supposed that there were two

different species, but a careful examination and comparison have established the fact that our common hemp is identical with the plant which from the earliest times has been celebrated in the East for its intoxicating properties. The hemp came to us originally from Persia, although it is stated to be a native of India, but, like the tobacco and the potato, it has a wonderful power of adapting itself to exigencies of soil and climate, and is now widely distributed over the surface of the globe. The sap contains a peculiar resinous substance in which the esteemed narcotic virtue resides. In northern countries the proportion of this resin is so small as to have escaped general observation, but in the warmer regions of the East it exudes naturally and in considerable quantities from every part of the plant. In Central India it is collected during the hot season by men clad in leathern dresses, who run through the hemp fields brushing violently against the plants. The soft resin naturally adheres to the leather, and is subsequently scraped off and kneaded into balls. In other districts the dress is regarded as superfluous, and is dispensed with, the collectors appearing in the most primitive costume. The parts used in Asia for the purposes of intoxication, and in Europe as a medicine, are chiefly the leaves, the flowering top, and the resin. It forms the intoxicating "bang" or "hashish" of the Eastern nations, and is known in India as "the leaf of delusion," the "increaser of pleasure," the "cement of friendship," the "cause of a reeling gait," and the "laughter-mover." It can boast of considerable antiquity, and is probably the "assuager of grief" of which Homer speaks as having been given to Helen by Telemachus in the house of Menelaus. It is said that during the wars of the Crusaders the soldiers of the Saracen army when intoxicated with this drug were in the habit of rushing into the camps of the Christians and committing great havoc, being themselves totally indifferent to death. These men were known as "hashasheens," from which is derived our familiar word "assassins."

There are several ways in which the *cannabis indica* may be employed for the production of its intoxicating effects. Sometimes it is smoked, but the most common form of hashish, and that which is the basis of most of the other preparations, is made by boiling the leaves and flowers in water, to which a certain proportion of fresh butter has been added. The decoction is evaporated to the thickness of a syrup, and is then strained through cloth, the butter in the process becoming impregnated with the active resinous principle of the plant. In this form it retains its active properties for many years, turning only slightly rancid with age. Its taste is very disagreeable, and it is consequently usually taken mixed with spices and other aromatic substances so as to form a confection or electuary. All preparations of Indian hemp are capable of producing intoxication, the most prominent effect of a large dose being a pleasant delirium, followed by more or less exhaustion. With Orientals the inebriation resulting from its use is usually of an agreeable or cheerful character, exciting the individual to laugh, dance, and sing, and to commit various extravagances. The drug is credited with the power of producing true happiness, an enjoyment purely moral and ethereal, a gratification uncontaminated with "things rank and gross in nature." The hashish-eater is happy, not like the gourmand, when he has satisfied his appetite, but rather like him who has just received tidings of great joy.

Bayard Taylor, in his "Pictures of Palestine," gives a most interesting account of the effects produced on himself by a dose of haschish taken experimentally. He was not an habitual haschish-eater, having used it only once before in Egypt, and then in a very mild form. The experiment was made in a caravansary in Damascus, and the drug was freshly procured by his dragoman. He was unacquainted with the strength of the mixture or the dose in which it should be taken, and he accordingly commenced with a tea-spoonful, allowing the paste to dissolve slowly in his mouth. He sat quietly for some time awaiting the result, but at the expiration of nearly an hour was unable to detect the least change in his feelings. He then took an additional half tea-spoonful, immediately followed by a cup of hot tea, to aid its absorption. This proved effectual, and a "fine nervous thrill," accompanied by a burning at the pit of the stomach, was suddenly experienced. The author in describing his sensations says:—

"The sense of limitation—of the confinement of our senses within the bounds of our own flesh and blood—instantly fell away. The walls of my frame were burst outward and tumbled into ruin; and without thinking what form I wore—losing sight even of all idea of form—I felt that I existed throughout a vast extent of space. The blood, pulsed from my heart, sped through uncounted leagues before it reached my extremities; the air drawn into my lungs expanded into seas of limpid ether, and the arch of my skull was broader than the vault of heaven. Within the concave that held my brain were the fathomless deeps of blue; clouds floated there, and the winds of heaven rolled them together, and there shone the orb of the sun. It was—though I thought not of that at the time—like a revelation of the mystery of omnipresence. It is difficult to describe this sensation, or the rapidity with which it mastered me. In the state of mental exhalation in which I was then plunged, all sensations as they rose suggested more or less coherent images. They presented themselves to me in a double form; one physical, and therefore to a certain extent, tangible; the other spiritual, and revealing itself in a succession of brilliant metaphors. The physical feeling of extended being was accompanied by the image of an exploding meteor, not subsiding into darkness, but continuing to shoot from its centre or nucleus—which corresponded to the burning spot at the pit of my stomach—incessant adumbrations of light that finally lost themselves in the infinity of space.

"My curiosity was now in a way of being satisfied; the spirit (demon, shall I not rather say?) of hasheesh had entire possession of me. I was cast upon the flood of his illusions, and drifted helplessly whithersoever they might choose to bear me. The thrills which ran through my nervous system became more rapid and fierce, accompanied with sensations that steeped my whole being in unutterable rapture. I was encompassed by a sea of light, through which played the pure harmonious colours that are born of light. While endeavouring, in broken expressions, to describe my feelings to my friends, who sat looking at me incredulously, I suddenly found myself at the foot of the great Pyramid of Cheops. The tapering courses of yellow limestone gleamed like gold in the sun, and the pile rose so high that it seemed to lean for support upon the blue arch of the sky. I wished to ascend it, and the wish alone placed me immediately upon its apex, lifted thousands

of feet above the wheat fields and palm groves of Egypt. I cast my eyes downward, and to my astonishment saw that it was built, not of limestone, but of huge square plugs of cavernish tobacco! Words cannot paint the overwhelming sense of the ludicrous which I then experienced. I writhed on my chair in an agony of laughter, which was only relieved by the vision melting away like a dissolving view; till out of my confusion of indistinct images, and fragments of images, another and more wonderful vision arose. I was moving over the desert, not upon the rocking dromedary, but seated in a barque, made of mother-of-pearl and studded with jewels of surpassing lustre. The sand was of grains of gold, and my keel slid through them without jar or sound. The air was radiant with excess of light, though no sun was to be seen. I inhaled the most delicious perfumes, and harmonies such as Beethoven may have heard in dreams, but never wrote, floated around me. The atmosphere itself was light, odour, and music; and each and all sublunated beyond anything the sober senses are capable of receiving. Before me, for a thousand leagues, as it seemed, stretched a vista of rainbows, whose colours gleamed with the splendour of gems—arches of living amethyst, sapphire, emerald, topaz, and ruby. By thousands, and tens of thousands, they flew past me, as my dazzling barge sped down the magnificent arcade; yet the vista still stretched as far as ever before me. I revelled in a sensuous elysium which was perfect, because no sense was left ungratified. But beyond all, my mind was filled with a boundless feeling of triumph. My journey was that of a conqueror—not of a conqueror who subdues his race either by love or by will, for I forgot that man existed—but one victorious over the grandest, as well as subtlest, forces of nature. The spirits of light, colour, odour, sound, and motion were my slaves, and having these I was master of the universe. The fulness of my rapture expanded the sense of time; and though the whole vision was probably not more than five minutes in passing through my mind, years seemed to have elapsed while I shot under the dazzling myriads of rainbow arches.”

Sometimes the most ludicrous ideas are produced by the use of the hemp. One of Bayard Taylor's friends imagined, whilst under the influence of the drug, that he was a steam engine. He suddenly sprang from his seat to the floor exclaiming, with a shriek of the wildest laughter, “Oh, ye gods! I'm a locomotive!” This was his ruling hallucination, and for the space of two or three hours he continued to pace to and fro, with a measured stride, exhaling his breath in violent jets, and when he spoke dividing his words into syllables, each of which he brought out with a jerk, at the same time turning his hands at his sides as if they were the cranks of imaginary wheels. The delusion must, in this case, have been very perfect, for having raised a pitcher of water to his lips, to quench his thirst, he put it down again without drinking, exclaiming, in the greatest excitement, “How can I fill my boiler when I'm letting off steam?”

It is stated that all persons are not similarly affected by Indian hemp, and that race and climate exert a modifying influence on its action. It has been estimated that it is habitually used for its intoxicating effects by from two to three hundred millions of the human race, and there is evidence to show that, when indulged in for a length of time, it produces loss of appetite and strength, and considerable mental weakness.

The preparation of the drug most commonly used for medicinal purposes is the "Extract of Indian Hemp," made from the flowering tops of the plant grown in India. It may be given in the form of pills (Pr. 67), one to be taken three times a day.

It may be combined with iron when there is great pallor, or any other indication for the use of that drug.

Cannabis indica is a most valuable remedy for *megrin* or *sick-headache*. It acts like a charm, and is most serviceable in warding off attacks. It is useful in those severe forms in which the headache is continuous for weeks and weeks, but it is especially effective when from fatigue, anxiety, or change of life the attacks are increasing in frequency. In some cases of *neuralgia* benefit may be experienced from its use, but it is not one of our best remedies for this complaint.

IODINE—IODIDE OF POTASSIUM.

Iodine is made from "kelp," or the ashes of sea-weed collected in the north of Scotland and Ireland. When pure, iodine is a black crystalline substance somewhat resembling black-lead. It stains the fingers, and, on being gently heated over a flame, is converted into violet vapour, having an extremely pungent and disagreeable odour. It is most commonly used dissolved in spirit, in the form of a liniment or lotion, when it is readily recognised by its peculiar colour and odour.

Iodide of potassium is a combination of iodine with potash, and differs very markedly in its appearance from iodine itself. It is a white crystalline salt, not unlike ordinary sea-salt. It is odourless, has a saltish taste, and dissolves readily in water.

Iodine is not suitable for internal administration, and its use is confined almost exclusively to its external application. There are several forms in which it may be used for this purpose, of which the "iodine liniment," the "tincture of iodine," and "iodine ointment," are the most useful. These differ from one another chiefly in their strength, and consequently in their activity. The iodine liniment is made by mixing together an ounce and a quarter of iodine, half an ounce of iodide of potassium, a quarter of an ounce of glycerine, and half a pint of rectified spirit. The tincture is made by dissolving a quarter of an ounce of iodine and half that quantity of iodide of potassium in the spirit; whilst the ointment is made by mixing thirty-two grains each of iodine and iodide of potassium with a drachm of spirit and two ounces of lard. The liniment is not only the strongest, but the most useful preparation; but many people have such a delicate skin that its application would cause too much irritation, and recourse must be had either to the ointment or tincture. For children the liniment is too strong, and the ointment should be used in preference.

In *consumption* the tincture of iodine may be applied to the front of the chest under each collar-bone, and will very often ease the cough and lessen the amount of expectoration when all the ordinary cough medicines have been tried in vain. The mode of application presents no difficulty. A little liniment is poured into a saucer and painted on the chest in a thin coat with a good broad brush. As soon as this layer is dried a second may be applied, but two are generally sufficient. The smell

of the iodine often causes smarting and watering of the eyes, and it is consequently advisable to keep them shut whilst it is being used, or to turn the head away.

A layer of cotton wool should be at hand to throw over the chest, so that the iodine may be prevented from touching and staining the linen. The liniment causes considerable smarting for some minutes, and sometimes even for an hour or two. It is better on this account to apply it in the morning rather than at bed-time, so that the rest may not be disturbed by the irritation.

Should the smarting really become unbearable the paint can readily be removed by washing the part with any kind of spirit that may be at hand, such as eau-de-cologne, spirits of wine, or even brandy or whiskey, and the pain will then be quickly relieved by the application of a poultice. A solution of iodide of potassium in water will also remove it. These preparations of iodine seldom or never blister, and may be used in moderation with perfect safety. The outer skin, however, occasionally after some days peels off in little flakes, but without leaving any sore.

Many old-standing *coughs not due to consumption* may be relieved by a single coat of the liniment painted on the back. Iodine inhalations (Pr. 106) are also useful.

In many cases of *stitch in the side* the iodine liniment painted over the painful spot will quickly give relief.

People who have long suffered from *gout and rheumatism with swollen joints* often apply the iodine liniment with advantage, the swelling in a few days gradually subsiding.

In early and slight cases of *ringworm* a few drops of the tincture of iodine will often effect a cure, though frequently other measures have to be resorted to.

Iodide of potassium has acquired a great reputation in the treatment of many old, long-standing diseases. It is the active ingredient in one or two patent medicines, and has made the reputation of several "world-renowned blood-purifiers," the other constituents being usually nothing more than a little burnt sugar and water.

It may be advantageously given according to Pr. 32. This mixture often proves beneficial in *rheumatism*, particularly in that form which begins in the evening and lasts nearly all night, but ceases in the day-time. The fact of the pain being worse at night is usually to be regarded as an indication that iodide of potassium will do good.

Pains in the bones occurring in middle-aged people, particularly if troublesome at night, often yield to this remedy. *Nodes* or tender swellings, or lumps on the bones, such as are sometimes met with on the skin, frequently disappear after a short course of this medicine. *Painter's colic*, and the numerous complaints from which painters, compositors, and others who gain their bread by working in lead, frequently suffer, may be greatly benefited by this mixture, the iodide of potassium having the remarkable power of expelling the lead from the system.

That troublesome complaint, *a cold in the head*, may often be cut short by taking a couple of doses of this mixture at bed-time.

Most people can take iodide of potassium even in large quantities, and indefinitely, without suffering from it in any way. There are people, however, who are so susceptible to its influence that even a single dose of it will bring on a condition which is known as "iodism." In "iodism" there is a constant watery discharge from the

eyes and nose, accompanied by a tight, uncomfortable feeling across the forehead. The sufferer is unable to bear the light, and generally shuts himself up in his room with the blinds drawn down, his time being chiefly occupied in alternately sneezing and blowing his nose. He generally imagines that he has a bad cold in his head, and says he can't think where on earth he caught it. On discontinuing the medicine this condition disappears almost as rapidly as it came, and the patient is puzzled enough to know why his cold got well so quickly. The addition of ten or fifteen drops of sal volatile to each dose of the mixture will often prevent the occurrence of this condition, even in those who usually suffer from it. Should this addition fail to arrest the production of iodism, the patient may regard it as an indication that he is unfortunately unable to take the medicine, and must manage to get rid of his complaint by some other means.

IPECACUANHA.

Towards the end of the seventeenth century ipecacuanha obtained in Paris a great reputation for the cure of dysentery. There is a curious anecdote related respecting its first introduction to public notice, but as there are several different versions of it we take the liberty of telling the story in our own way. It appears that a merchant named Garnier, who had been attended by his physician through a long and dangerous illness, presented him, on his recovery, with a root which was said to be a positive cure for dysentery. The physician, however, being old, and having a good practice, was but little inclined to put faith in any new remedy. He postponed making a trial of the wonderful root from time to time, and finally gave it to his pupil, Helvetius, telling him to do what he liked with it. Helvetius, who was a very energetic young man, lost no time in administering it to several of his friends and patients who were suffering from dysentery, and the success of the treatment convinced him that he had indeed found a specific for that disease. He at once saw the value of his discovery, but instead of sharing it with the members of his profession, for the benefit of suffering humanity, determined to keep it a secret, and use it as a commercial speculation. He entered into a contract with the Willing of the period, and in a few days the whole city was placarded with bills, setting forth the manifold virtues of the new drug. The advertisement was in every paper, the hoardings were covered with gaily-coloured posters, sandwich-men promenaded up and down the boulevards, and you could not even go outside your door without being advised, in letters a foot long, to try "Helvetius's Anti-Dysenteric Pills." Time went on, dysentery was unusually prevalent, and at last it was known that the Dauphin, the son of Louis XIV., had contracted it. There were frequent consultations of the court physicians and surgeons, but still their royal patient got no better. At last, having exhausted every means at their disposal, they resolved to send for Helvetius. They could not meet him in consultation after his unprofessional conduct, but they told him they were willing to purchase his secret at his own price. He agreed to sell it for £1,000, a sum at that time worth very much more than now. The money having been handed over to Helvetius, he told them that his remedy was ipecacuanha. The truth of his statement was confirmed by the merchant Garnier, who opportunely put in an appearance and claimed a share of the profits.

Subsequently Helvetius repented of his evil ways, tore down the objectionable placards, was restored to professional favour, and finally ended by writing a learned and elaborate treatise on the uses and properties of his favourite drug.

Ipecacuanha is the root of a plant growing in moist woods near Pernambuco and Rio de Janeiro. As met with in the shops it is in irregular contorted pieces some three or four inches long, and of about the thickness of a small quill. It consists of two parts, an outer brittle portion, which is active, and of an almost inert, slender, tough, woody, central cord. The powder is of a pale brown colour, and has a nauseous and somewhat bitter taste.

Some people are extremely susceptible to the action of ipecacuanha, even the minutest quantity inducing in them symptoms somewhat resembling those of hay fever. This idiosyncrasy is a considerable inconvenience to those who, from the nature of their employment, are brought much in contact with the drug. A lady, the wife of a surgeon, could always tell when he was dispensing a prescription containing ipecacuanha, from the distressing tightness in the chest which she experienced. If by any mishap she happened to enter the surgery, even for a moment, whilst the drug was being powdered, she was almost immediately affected with violent and protracted sneezing. Sometimes this was followed by difficulty of breathing, cough, and spitting of blood.



Fig. 12.—IPECACUANHA.

In some cases the paroxysms have lasted for days, and the subsequent exhaustion has been so great as to threaten the life of the unfortunate sufferer.

In larger doses ipecacuanha produces nausea and vomiting, accompanied by perspiration and a feeling of weakness. The quantity required to excite vomiting varies greatly in different people; with some the smallest dose is sufficient, whilst with others large doses are imperative. As a rule, fifteen grains of the powdered root, or a table-spoonful of the wine, will suffice to produce the desired result. It is often an advantage where time is not an object to administer an emetic in divided doses—a sixth part, for example, every three or four minutes. Children require almost as much as adults. Ipecacuanha may be described as an emetic which is mild, somewhat tardy, but certain in its action. It produces very little prostration; but the fact of its not acting instantly renders it a less valuable medicine than sulphate of zinc in cases of poisoning.

In the emetic draught (Pr. 27) the ipecacuanha and sulphate of zinc are combined. It is certain and prompt in its action. Vomiting may be promoted by draughts of hot water.

The most commonly employed preparation of ipecacuanha is the wine, which is made as follows:—Macerate one ounce of ipecacuanha in coarse powder in one pint

of sherry for seven days, with occasional agitation; strain, press, and filter, then add sufficient sherry to make it up to a pint.

We will now consider the therapeutical applications of ipecacuanha—the diseases in which it proves most beneficial, and its mode of administration.

In the first place, as regards *dysentery*, the disease in which it won its laurels. It is necessary in these cases to administer the drug in large doses, or but little benefit will be obtained from its employment. From sixty to ninety grains of the powder should be given as a dose, and repeated in from ten to twelve hours if necessary. This large dose does not as a rule produce nausea or sickness, but should these symptoms arise they may be obviated by making the patient lie down immediately after taking the medicine. In old, long-standing cases not requiring prompt treatment it is a good practice to administer the first dose at night when the patient is in bed. Should the first few doses excite sickness the medicine need not be discontinued, as this symptom passes off in a few days. Frequently the beneficial effects of the treatment is almost instantaneous, the motions even in the very worst cases becoming natural in frequency and character, and relief being obtained from the straining and griping.

Some forms of *diarrhœa* in children may be admirably treated with ipecacuanha. The indications for its employment are *vomiting, purging, and the stools being tinged with blood*. If given hourly, in half tea-spoonful doses of the mixture (Pr. 50), it will often succeed in removing the sliminess of the stools, even when the other symptoms are absent. The vomiting, when present, is usually arrested before the diarrhœa.

Few remedies are more efficacious in checking some kinds of *vomiting* than ipecacuanha, given according to Pr. 50. It is the best remedy for the *vomiting of pregnancy*. This distressing complaint usually occurs only in the morning, frequently on getting out of bed, or whilst in the act of dressing. If relief be not speedily obtained from the mixture taken in the ordinary way, a dose should be given on awakening, and before any attempt is made to move. Sometimes the nausea and vomiting come on before or immediately after every meal, so that the unfortunate patient is in danger of dying of starvation in the midst of plenty. Ipecacuanha is *the* remedy in these cases. Sometimes, though rarely, the vomiting of pregnancy fails to yield not only to this but to every other medicine. It is probable that in many of these cases it is dependent on a displacement or alteration in the shape of the womb, which would require treatment by an obstetric physician, or one who has devoted especial attention to this branch of medicine. Many women who, during their pregnancy, have been free from nausea and vomiting, suffer from both these symptoms when they are suckling. They may be so constant and severe as to greatly exhaust the strength of the mother, and to compel her to wean the child prematurely. This condition is admirably treated by tea-spoonful doses of the ipecacuanha mixture three or four times a day.

Ipecacuanha undoubtedly exerts a powerful influence on the bronchial tubes, and is one of the chief ingredients in nearly all our cough medicines and lozenges. The wine, used as an inhalation, in the form of spray, is undoubtedly the best treatment for *chronic bronchitis* (see BRONCHITIS).

In many cases of *whooping-cough*, Pr. 50 does good; the indications for its administration are the occurrence of retching and vomiting.

Ipecacuanha has been employed with success in all forms of *bleeding*, but especially in *bleeding from the bowels*. In some very severe forms of *flooding* a tea-spoonful dose of ipecacuanha wine has arrested the flow, and rescued the patient from a most critical condition.

IRON.

For more than 3,000 years iron has been used in medicine. It was known to the antediluvian patriarchs, and it is probable that it was the first mineral used internally. By the alchemists it was called mars, and was represented by the symbol δ .

It is a constant and necessary constituent of the body, and enters largely into the composition of the colouring matter of the blood. Iron is essentially a blood tonic, or "blood maker." It possesses the power of improving the quality of the blood, by restoring to it those principles in which it is deficient. In the condition known as "anæmia," or "poorness of the blood," there is a deficiency of iron in the system, and the administration of this element will effect a cure, almost as certainly, though not so quickly, as food will cure hunger or water thirst.

The preparations of iron are numerous, but it is used in the treatment of so many diseases that this is a great advantage. We cannot do better than review in detail some of the most useful of these preparations.

Steel Wine is a favourite form in which to administer iron to children. It is made by suspending for a month an ounce of iron wire in a pint bottle of sherry in such a manner that it is very nearly, but not quite, immersed. The bottle should be frequently shaken, and the stopper removed. When the process is complete the wine should be strained, and is then ready for use. The best wire to use for this purpose is what is known in the trade as No. 35. Some people substitute malaga for sherry, and the iron wine so made, if not better, has certainly the advantage of being sweeter. A mixture of sherry and malaga is very palatable. The dose for a child is one or two tea-spoonfuls. For an adult a small wine-glassful may be taken with a biscuit for lunch. It is a mistake to regard such an agreeable preparation as a medicine. The only disadvantage of taking a large dose is that it is apt to confine the bowels. Burrough's Beef and Iron Wine is an excellent preparation.

In Devonshire and some other parts of the country cider is used instead of the wine. A handful of iron nails or thin wire is thrown into a bottle of cider, and allowed to digest for a week. A wine-glassful is taken three times a day. This form is not officinal in England, but is recognised in Germany.

Reduced Iron, so called from being reduced in its preparation from an oxide of iron, is a fine greyish-black powder which is strongly attracted by the magnet, and exhibits metallic streaks when rubbed with firm pressure in a mortar. It is insoluble in water, but being in a finely divided state is readily dissolved by the acid juices of the stomach. It is a most powerful remedy for restoring the condition of the blood, and it can be conveniently administered to children, as it is almost

destitute of taste, and but a very small dose is required. The iron powders (Pr. 76) will be found useful, and may be placed on the tongue or mixed in food three times a day.

Reduced iron can also be obtained as reduced iron lozenges, each containing one grain. From one to six may be taken as a dose.

The *Moist Peroxide of Iron* is made by precipitating a solution of persulphate of iron with soda, collecting the precipitate on a calico filter, and preserving without drying in a well covered vessel. It is a pasty mass of reddish-brown colour. It is not much used in the treatment of disease, but is a valuable antidote in case of arsenic poisoning, in which it is given in table-spoonful doses as fast as the patient can swallow it. When dried and powdered this preparation is used for making chalybeate plaster, which is used for lumbago and other complaints, when warmth and rest are desirable.

Griffith's Mixture, or compound iron mixture, is made as follows :—Rub together in a mortar a drachm each of myrrh and sugar and half a drachm of carbonate of potash, make them into a thin paste with a little rose water, then add gradually more rose water and four drachms of spirit of nutmeg until nearly half a pint of milky fluid is formed. Then add twenty-five grains of green vitriol dissolved in about four table-spoonfuls of rose water, and stir it all thoroughly together, when there will be about half a pint of mixture. The bottle in which it is kept should be quite full and tightly stoppered, so as to exclude the air. In a few days the mixture decomposes, losing its grass-green colour and becoming yellowish-brown, when it is no longer fit for use. This mixture has obtained a great reputation for restoring the periods in young pallid women in whom they have temporarily ceased. It should be taken in doses of two table-spoonfuls or more three times a day, the treatment being commenced a week or ten days before the expected time.

Griffith's Pills, or carbonate of iron pills, are sometimes used for a similar purpose, but are far less successful ; one or two may be taken three times a day.

These preparations were first used by Dr. Moses Griffiths, a physician of the last century.

Tincture of Steel, or tincture of perchloride of iron, is one of our most valuable preparations of iron. It is decidedly astringent in its action, and some people have a difficulty in taking it. For those who like iron, and with whom it agrees, twenty drops of tincture of steel may be taken in a glass of water three times a day. For those who are not accustomed to its use Prs. 1 and 2 are to be preferred. The chloric ether and glycerine disguise the taste and lessen the roughness of the iron, whilst the quassia as a stomachic bitter improves the appetite.

Green Vitriol, or *Sulphate of Iron*, is another very valuable preparation of iron. It is an old, old drug, which was used by the Romans in the time of Pliny for making ink. It is prepared by dissolving iron wire in oil of vitriol and crystallising the solution. It is met with in beautiful light bluish-green crystals, which when dissolved in water form a solution having a very astringent taste. The crystals and solution on exposure to air gradually assume a dirty brown colour, an indication that they are decomposing and have deteriorated in character. By strongly heating the crystals, the water which they always contain is driven off, leaving the dried sulphate of iron.

This is, weight for weight, nearly twice as strong as the crystals. It is used in the preparation of sulphate of iron pills (Pr. 63). These pills contain nothing but dried sulphate of iron and one drop of syrup to make them coherent. A little care and knack are requisite to make them, but there is no real difficulty. When made they should be as hard as a marble, and should they not exhibit this character, it is to be taken as an indication that there has been some error in their preparation. Sulphate of iron is often given with aloes, as in Pr. 64.

Syrup of Iodide of Iron.—This is made by the direct combination of iron with iodine. The only objection to its use is that it is apt to decompose when exposed to the light or air. The decomposition may be to some extent obviated by suspending in the fluid a coil of iron wire. It is administered when we wish to give iodine, and at the same time desire the tonic and blood-making power of the iron. The dose is from twenty drops to a tea-spoonful, which may be given in water. It is one of the ingredients of Pr. 4.

Phosphate of Iron is a slate-blue amorphous powder, insoluble in water. It is often used in cases of rickets and other affections of the bones, in which the use of iron is indicated. It may be given, freely diluted with water, in the form of syrup of phosphate of iron, each spoonful of which contains one grain of the phosphate. The dose of the phosphate of iron is from five to ten grains. Pr. 4 contains both the phosphate and iodide of iron.

The Wyeth Dialysed Iron is an excellent preparation, and is taken without difficulty.

Parrish's Chemical Food contains in each tea-spoonful one grain of phosphate of iron, two grains and a half of phosphate of lime, with potash and soda. The dose is one or two tea-spoonfuls in a little water, three times a day.

Easton's Syrup is said to contain in each tea-spoonful one grain each of phosphate of iron and phosphate of quinine, and one thirty-second of a grain of strychnia, besides syrup and water. The dose is a tea-spoonful in water three times a day. The presence of strychnia in this preparation should be borne in mind, as an overdose would undoubtedly be attended with unpleasant consequences.

Citrate of Iron and Ammonia.—This is a mild preparation of iron, which, from its freedom, astringency, and agreeable taste, is readily taken by children and delicate people. It is made in thin, shiny scales of a beautiful hyacinth-red colour. It is soluble in water and in most infusions, and should be given in doses of from five to fifteen grains. Pr. 3 is an agreeable form in which to take it.

Citrate of iron wine is made by dissolving 160 grains of citrate of iron and ammonia in a pint of orange wine, shaking it occasionally, and at the end of the third day filtering it, when it is ready for use. The dose is from a tea-spoonful to a table-spoonful.

Tartarated Iron, like the citrate, is a "scale" preparation. It occurs in thin, transparent flakes of a deep garnet colour. It is slightly sweetish and astringent in taste. A solution in water is sometimes, on account of its cheapness, used as a substitute for steel wine. Such economy in the treatment of the sick is undesirable, and is in reality but another name for reckless extravagance.

Citrate of Iron and Quinine is an elegant preparation combining the properties of iron and quinine. Its thin, golden yellow scales have a chalybeate and bitter

taste, and may be taken in ten-grain doses in any aromatic water. It may be given too, in an effervescing form, as in Pr. 7.

In speaking of the different preparations of iron it will have been noticed that some, such as the tincture of steel, are described as being astringent, whilst others are said to be destitute of astringent properties. The astringent preparations are undoubtedly the most valuable, but as they sometimes upset the stomach, recourse must be had occasionally to those which are milder and less active. Iron salts have this disadvantage, that they frequently temporarily discolour the teeth, and stain the tongue black. Some people on this account take all mixtures containing iron through a quill or straw, sucking them up with as much gusto as if they were drinking sherry cobbler. Such a precaution is almost superfluous, for just brushing over the teeth with a tooth-brush and rinsing out the mouth with a little tepid water will generally suffice to ease the minds of even those who are most particular respecting their personal appearance.

The long-continued use of iron has a tendency to confine the bowels, a point to which attention should be directed. The difficulty may be overcome by the occasional use of a saline purgative. Many medical men consider that the addition of a laxative to an iron preparation increases the activity of the latter. Should the perchloride of iron mixture prove too binding, half a tea-spoonful of Epsom salts or five drops of tincture of belladonna may be advantageously added to each dose.

Iron salts colour the stools black, a condition which need excite no alarm, as it is a natural consequence of the administration of the medicine.

There are individual peculiarities with respect to iron, just as there are in regard to iodine and many other medicines. Many people tell you that it is no use recommending them iron, because they cannot take it. They "never could take it," it always "upsets the stomach," and brings on "a nasty fulness about the head." They will take anything but iron, but iron they cannot and will not take. This, as a rule, means nothing more than they have not yet found a preparation of iron that will suit them, and when iron is the only remedy that will prove of benefit, our chances of curing them depend solely upon our ability to find some form of iron which will not inconvenience them. The sulphate of iron pill (Pr. 63), a strong and valuable preparation, may often be administered under these circumstances, when everything else has failed. In all cases it is advisable to occasionally humour the stomach by changing the form in which the iron is given. The continuous use of the same mixture for any length of time is apt to become distasteful, merely from its constant repetition, if from nothing else. It is almost as bad as being confined to one article of diet.

It has been said that people of a sanguine temperament owe their disposition to an excess of iron in the blood, and that the phlegmatic temperament is caused by a deficiency of that constituent. We fear that it can hardly be claimed for iron that its administration has the power of improving the disposition. If this fact were established there are a good many people who might be benefited by a course of this tonic.

Let us now turn our attention to the consideration of those diseases in which iron is likely to prove of service.

In the first place, it is to be regarded almost as a specific for *anæmia*, or

bloodlessness. One so frequently sees people, both men and women, suffering from this condition, that its indications are hardly likely to have escaped our attention. The sufferer is pale, languid, listless, and generally out of sorts. The colour has flown from his cheeks, and the ruddy hue of health has given place to that pale flabbiness which is a sure indication of ill-health. His work is a trouble instead of a pleasure, he no longer takes any interest in it, and probably says, or at all events feels, that everything is a bore and a nuisance. His appetite is poor, he generally suffers from indigestion, and very frequently from some disturbance of the bowels. If you examine his nails, or turn down his eyelids, or look at the inside of his lips, you will find that they are white and pale instead of presenting their natural florid red colour. This is a formidable list of symptoms, but the condition is fortunately one which can be readily and quickly remedied by full doses of the perchloride of iron mixtures (Prs. 1 and 2), or by taking the sulphate of iron pills (Pr. 63.) The patient should of course live as well as possible, and, above all, take plenty of out-door exercise.

Many young and delicate women who suffer from irregularity of the periods become anæmic to such an extent that their complexion assumes almost a greenish hue. This condition, known as *chlorosis* or *green sickness*, is readily controlled by the use of iron. As an old writer says: "It is good to cure maidens of the greene sicknesse, and sends againe the lively colour into their faces." The systematic use of the iron pills is almost invariably attended with the most satisfactory results. A pill three or four times a day will in a week produce a very marked improvement. The patient's natural colour quickly returns, and the rosy hue of health once more mantles the cheeks which it seemed to have forsaken for ever. Iron is equally beneficial in cases in which the paleness is the result of some sudden loss of blood, or of a long continued and exhausting discharge. It supplies the pabulum of which the system has been drained.

Bleeding from the lungs, kidneys, or stomach, is often controlled by tincture of steel taken in a little water. The less astringent preparations are of comparatively little service in these cases.

Many complaints, such as *epilepsy*, *hysteria*, and *neuralgia*, are greatly aggravated by the co-existence of anæmia. Iron, by removing this condition, will often lessen the severity of the attacks, Nature, with a new means at her disposal, making a fresh effort to restore the balance of health. The effervescing iron mixture (Pr. 7) may be taken at intervals with advantage.

Many children suffering from *St. Vitus's dance* will be found on examination to be paler than natural, and the administration of some mild form of iron such as the citrate of iron mixture (Pr. 3), or the iron powders (Pr. 76), will often, by the removal of the impoverished condition of the blood, cure the complaint.

It may be laid down as a rule that when a patient is markedly pale, iron in some form or other will prove beneficial. Even in *Bright's disease*, and in *disease of the heart*, iron, although it may be useless as a curative agent, will often mitigate the intensity of some of the most distressing symptoms, and at all events give temporary relief.

In *diphtheria* and in *erysipelas* large doses of iron should be administered.

Fifteen to twenty drops of the tincture of steel, given every hour in water for several consecutive hours, will do much to lighten the severity of the attack. The frequent repetition of the medicine is the essential condition for the attainment of success.

For the removal of those abominable little *thread-worms* which so frequently infest the lower bowel, an injection containing tincture of steel is very efficacious. The injection is made by adding half a tea-spoonful of tincture of steel to a pint of water, and throwing this, by means of a syringe, well up into the bowel. The iron coming into contact with the parasites quickly destroys them, and they are then expelled without difficulty. The use of the iron in the form of an injection is necessary, it is almost useless to take it in the usual way—by the mouth.

JALAP AND SCAMMONY.

These drugs are both yielded by plants belonging to the natural order of which our common convolvulus is a member. By jalap we mean the dried roots of the jalap plant, a native of Mexico, imported from Xalapa, or Jalapa, the city from which the name of the plant is derived. Scammony is a resin obtained from the dried root of a species of convolvulus, growing in Syria and Asia Minor. It occurs in irregular masses, of a blackish-green colour and musty odour. It is most extensively adulterated, the best scammony often containing less than one-third of the real drug, the rest being a compound of starch, woody fibre, gum, and earthy matter, including chalk.

Both jalap and scammony are purgatives, and are employed in cases of obstinate constipation. The former is best administered in the form of the compound jalap powder, which consists of jalap, acid tartrate of potash, and ginger. The dose of this is for an adult from ten to thirty grains. In dropsies a fifteen-grain dose may be given every morning or on alternate mornings with advantage, for a brisk watery purge serves to carry off the excess of fluid from the body and limbs. There is a similar preparation of scammony known as compound scammony powder, containing scammony, jalap, and ginger. It is used as a purgative in from ten to twenty-grain doses. To children it is given in doses of from three to five grains.

KINO.—See CATECHU, KINO, &c., p. 789.

LAUDANUM.—See OPIUM, p. 858.

LEAD.

The oxide of lead is known as “litharge,” and is largely employed in making plasters. It is formed when melted lead is exposed to a current of heated air, and is usually procured during the process of extracting silver from lead ore. It occurs in pretty scales of a pale brick-red colour.

The “lead or diachylon plaster” is made by boiling together four pounds of powdered litharge, one gallon of olive oil, and three and a half pints of water, keep-

ing them simmering for four or five hours, and stirring constantly until the mass has acquired a proper consistence to be spread on calico. The ordinary "sticking plaster" is made by adding to every two pounds of the melted diachylon plaster four ounces of resin and two ounces of hard soap. "Soap plaster" differs from the latter in the proportions of lead and resin, there being added to every two and a quarter pounds of melted diachylon plaster six ounces of hard soap and one ounce of resin. We need hardly say that only under very exceptional circumstances would it be necessary to make these plasters oneself, for unless a large quantity were required those obtained from the chemist would be in all probability equally good, and undoubtedly cheaper. At the same time it is desirable to be acquainted with the composition of these different plasters, as they differ somewhat in their uses and properties. The diachylon plaster is much valued for its adhesiveness, smoothness, and complete freedom from irritating properties. It forms an excellent strapping for parts requiring support, and is employed for keeping the surfaces of wounds in contact. The ordinary sticking-plaster is still more adhesive, but its use is occasionally objectionable on account of its irritating properties. The soap plaster is frequently used as an application to tender or abraded surfaces.

A stout lead plaster will often relieve pain in the loins dependent on general weakness. Pains in the back due to piles or some derangement of the womb are often cured by the same means. Plasters occasionally cause intolerable itching from the retention of the sweat, but this difficulty is readily obviated by punching them at regular intervals with a number of little holes somewhat larger than a pin's head.

Acetate of lead, or sugar of lead, is made on a large scale from litharge. It is a white, spongy-looking mass, composed of brilliant, but minute needle-shaped crystals, having a sweetish taste. It dissolves in water, forming a clear or slightly milky fluid. Sugar of lead is undoubtedly a poison; but it is much less energetic in its action than is generally supposed. Upon one occasion, by some accident, about thirty pounds of this substance were mixed at a miller's with eighty sacks of flour, and the whole was made into bread by the bakers, and supplied as usual to their customers. No fewer than five hundred people were attacked with symptoms of poisoning after partaking of this bread, but not one of the cases proved fatal. The symptoms produced by an over-dose are a dry, burning sensation in the throat, thirst, vomiting, colic, great prostration, and cramps in the limbs.

What to do in Poisoning by Sugar of Lead.—1. Send for the doctor. 2. Promote vomiting by a tea-spoonful of sulphate of zinc and frequent draughts of warm water, or any other means. 3. Give a table-spoonful of Epsom salts or Glauber's salts.

Slow poisoning from the continuous and prolonged introduction of lead into the system is by no means uncommon. There are many ways in which this may arise, and it is not always easy to detect the source of the mischief. It is frequently met with among workmen whose occupations bring them habitually into contact with preparations of lead. Painters, who use white-lead in the preparation of their colours, so frequently suffer from one of its most prominent symptoms that the

complaint is often known as "painters' colic." Card-glazers and paint-grinders are subject to the disease, whilst compositors, from handling leaden type, are sometimes disabled by it. Lead miners, and more especially those who are engaged in smelting the metal, become early acquainted with the disease and its attendant dangers. The workmen who are employed to whiten Brussels lace by beating white-lead into the fibre, constantly breathe an atmosphere of this poisonous salt, and frequently suffer from lead poisoning. It is not, however, by any means confined to those who earn their bread by the sweat of the brow, for it is introduced into the system in so many different ways, that every one, the richest and poorest, may suffer from its effects. Drinking-water which has been kept in leaden tanks or has been conveyed for any distance through leaden pipes is a fruitful source of mischief. Some years ago a contractor undertook to supply a town in the west of England with water from a spring some quarter of a mile distant. Leaden pipes were laid down for the purpose, and in a few weeks after the opening of the new supply there were a large number of cases of lead-poisoning, the teetotalers more especially being sufferers. The inhabitants became alarmed, the matter was investigated, and the water supplied in the town—although at the spring perfectly pure—was found to be largely contaminated with lead. The leaden pipes were replaced by iron pipes, and the epidemic of lead-poisoning, which had so quickly arisen, soon disappeared.

Home-made wines are often contaminated with lead from being carelessly allowed to ferment in jars glazed with a composition containing lead. Shot used for cleaning bottles is accredited with the power of causing lead-poisoning if not removed before bottling the wine. Formerly, chronic lead-poisoning was so prevalent in Devonshire, that an inquiry was instituted into the origin of what was called the *Devonshire colic*. In the first place it was found that it occurred chiefly in persons who drank the cider there manufactured, and by degrees the malady was traced to the admixture of lead with the cider, either designedly for the purpose of sweetening it, or by the inadvertent employment of lead in the construction of the cider mills and vats. Under somewhat similar circumstances arose the colic of Poictou. Preparations of lead were largely used to prevent the wines of the country from turning sour, the injurious effect of the metal upon the human body not being at that time recognised.

It has been found that in public-houses the beer first drawn in the morning is largely impregnated with lead derived from standing during the night in the pipes used to convey it from the barrels to the bar. The early tippler has to encounter more dangers than is generally supposed. Several curious cases of slow poisoning have occurred from the habitual use of snuff coloured with red lead. It occasionally happens that even when the snuff has not been intentionally adulterated, enough lead has been absorbed from the leaden packing to cause well-marked symptoms. Children's farinaceous foods, which have been packed in lead, should be carefully avoided. Wafers are sometimes coloured red with lead, a circumstance which has been ingeniously employed by a sensational novelist in the elaboration of a plot in which slow poisoning was the chief incident. Many ladies will hear with surprise, not altogether unmixed with alarm, that lead is one of the commonest ingredients of hair dyes, and that it enters largely into the composition of some of the most

popular cosmetics. Many cases of lead poisoning have arisen from the too frequent and liberal application of preparations rejoicing in the name of "Bloom of Youth," or some equally attractive title.

Occasionally, sugar of lead, taken for medicinal purposes, has excited symptoms of poisoning; but such cases are rare, and afford no ground for abandoning the use of a most valuable remedy. A very small quantity of lead, if frequently repeated, is adequate to produce all or some of the symptoms of lead poisoning—a quantity, for instance, not greater than from one-fortieth to one-fiftieth of a grain in the gallon. There is no doubt that some people are much more readily affected by lead than others; in fact, the susceptibility to its action runs in families just as much as gout does. An instance is related of a lady who presented all the symptoms of lead poisoning, from sleeping for a single night in a room which had been recently painted. Another lady suffered from lead colic and paralysis, which are supposed to have been caused by the emanations arising from some lead works situated nearly three-quarters of a mile from the house in which she resided. Of course, such cases as the last are quite exceptional, and can be regarded only in the light of curiosities. The possibility of the use of the preparations of lead for criminal purposes should not be overlooked.

The symptoms caused by slow lead poisoning are so characteristic that the nature of the complaint cannot, in well marked cases, remain long unrecognised.

In the first place there is "colic," pain of a most distressing character in the walls of the abdomen, chiefly in the region of the navel. At one time it raged like an epidemic in a portion of our fleet, from the accidental impregnation of the rum with lead, and was then known as the "West Indian dry belly-ache." The pain is usually eased, but occasionally aggravated, by firm continuous pressure. Very frequently the colic is one of the first symptoms of lead poisoning, but occasionally its appearance is delayed until long after the nature of the complaint has been determined by other signs. The colic is usually associated with, and possibly dependent on, a confined state of the bowels. The constipation caused by lead is most obstinate, even powerful purgatives producing very little effect. Frequently the patient suffers from cramps in the calves of the legs, and other parts of the body. He is harassed by pains in the joints, which are generally of a rheumatic character, and are increased by movement of any kind, but more especially by cold, damp, or wet weather.

In addition to these symptoms there are complete loss of appetite and intense thirst, the mouth is dry, and the breath usually offensive. The general nutrition of the body is impaired, the skin becomes pale and sallow, and soon the patient is but a shadow of his former self. Sometimes there is paralysis, which frequently assumes the form of "wrist drop." The muscles of the arm are wasted, the wrist can be no longer straightened, and the hand hangs down powerless and useless.

A very curious symptom, and one which is always associated with chronic lead poisoning, is the occurrence of a blue or purplish line running along the edges of the gums, just where they meet the teeth. It is seen on the gums only where they come in contact with the teeth, and where there are no teeth the line is absent. It is observed first, and is always most marked on the gums in the neighbourhood of

the front or incisor teeth. It is one of the earliest indications of the effect of lead on the system, and is one of the last to disappear. It is never absent in slow poisoning by lead if there are any teeth, and its presence has served to elucidate the nature of many a previously obscure case of disease. When colic or "wrist drop" is present this blue line should always be looked for.

We must now consider the treatment to be adopted in cases of lead poisoning. Obviously the first thing to do is to detect the origin of the mischief, and to make sure that no more lead is introduced into the system. In the case of contaminated water, some other source of supply must be found, or the patient must confine his attention to other beverages. It is always desirable to start with a good purge, and two table-spoonfuls of Pr. 34 should be taken every four hours, until the bowels are well opened. The iodide of potassium mixture (Pr. 32) should then be taken in two table-spoonful doses three times a day. In cases of "wrist drop" galvanism will probably have to be resorted to under medical advice and superintendence.

When a person has once suffered from lead poisoning he will in all probability, unless extremely careful, be attacked again. If a worker in lead, he should make an endeavour to find some occupation in which he is not brought in contact with the metal. Except in the case of young men, it must be acknowledged that it is no easy matter to change one's employment. If unfortunately obliged to return to his old work, he should pay the utmost attention to cleanliness—a point too frequently neglected by artisans who work in metals. The face and hands should, if possible, be always washed before meals, the mouth should also be rinsed out, and the hair combed. The working clothes should be washed once or twice a week, and should be used as little as possible out of the workshop. The meals must never be taken in a room in which the manipulation of lead is in any form in progress. Many workers in this metal find it advantageous to take three or four times a day, in a little water, fifteen drops of aromatic sulphuric acid. The acid combines with the lead to form an insoluble compound, which is not absorbed into the system. In many large lead works the men are given treacle-beer acidulated with sulphuric acid. It is made as follows:—

Treacle, 15 lb.; bruised ginger, $\frac{1}{2}$ lb.; water, 12 gallons; yeast, 1 quart; bicarbonate of soda, $1\frac{1}{2}$ oz.; oil of vitriol (sulphuric acid), $1\frac{1}{2}$ oz. by weight. Boil the ginger in two gallons of water, add the treacle and the remainder of the water (hot), put the whole in a barrel, and add the yeast. When the fermentation is nearly over add the oil of vitriol, previously mixed with eight times its weight of water; lastly the soda, dissolved in a quart of water. It is fit for use in three or four days.

Goulard water is a dilute solution of subacetate of lead. It is a cooling, sedative, and astringent lotion, and is frequently used externally as an application to bruises, burns, scalds, and wounds of all kinds. In some forms of skin disease, when there is much inflammation, and when the surface is raw and weeps copiously, the lotion applied on linen not only checks the discharge, but allays the accompanying itching, burning, and tingling. The application should be renewed frequently. It is a poison when taken internally. A drummer in a French regiment, who was much addicted to drinking, stole a bottle of Goulard water and drank it for the sake

of the spirit which it contained. How much he actually drank was not ascertained, but the quantity was sufficient to cause death on the evening of the third day.

Sugar of lead is, from its astringent properties, largely used internally for checking *bleeding* from all parts of the body, but more especially from the *lungs* and *stomach*. It is best administered according to Pr. 30, two table-spoonfuls being taken every four hours until the bleeding ceases. This mixture is useful in all forms of *diarrhœa*. It is frequently successful in arresting the purging of *dysentery* and *typhoid fever*. It is also used for arresting the morbid changes in the kidney in *Bright's disease*.

LOBELIA.

Indian tobacco (*Lobelia inflata*) is a native of North America, and was used by the aborigines long before its introduction into European practice. For many years it was employed almost exclusively by the so-called medical herbalists, who stoutly maintained that it was incapable, even in large doses, of producing any ill effects. Many deaths have occurred from its injudicious use, and although it is a valuable remedy for many diseases it is not a drug which can be given in unlimited quantities. The symptoms produced by lobelia poisoning are very similar to those resulting from tobacco. Some people are very susceptible to the action of the drug, and even a small medical dose may cause a good deal of depression, and perhaps vomiting. These effects, although disagreeable, are transitory, soon passing off. The preparation of lobelia most commonly employed is a tincture of the strength of two and a half ounces of the dried plant to a pint of spirit.

Lobelia has obtained its reputation chiefly in the treatment of *asthma*. On any indication of the onset of an attack, the use of the medicine should be at once commenced. Ten drops should be given every ten minutes in a little water for an hour, or until relief is obtained. By this method of using divided doses the risk of depression is almost completely obviated, for the patient can discontinue the use of the drug as soon as there is any nausea or sickness.

Sometimes lobelia proves very useful in *whooping cough*, in a few days reducing the frequency of the spasmodic attacks by one-half. For children of ten years of age, fifteen drops of the tincture should be given every hour, with an additional dose before each paroxysm, if its advent can be predicted. For very young children five drops of the tincture may be given every hour. Curiously enough children are infinitely more tolerant of lobelia than are adults, it seldom causing in them any depression or nausea.

LETTUCE AND HOPS.

The common lettuce possesses distinct narcotic properties. Its sedative powers have been long and familiarly known, and we are told in the fables of antiquity that after the death of Adonis, Venus threw herself on a bed of lettuces to lull her grief and sooth her anguish. It is related moreover of Galen, the celebrated physician of the first century, that he was in the habit of eating a lettuce at bed-time, for the relief of sleeplessness, a practice still resorted to with success by many who experience a difficulty in obtaining their fair share of rest.

The leaves of our common garden lettuce are universally esteemed as a cooling and agreeable salad, but when the plant is allowed to flower it develops a bitter milky juice, leaving an odour allied to that of opium. When the stem is cut off about a foot from the top this juice freely exudes, and by exposure to the air dries and forms a brown solid called *lactucarium* or *lettuce opium*. This substance is yielded in still greater abundance by the strong-scented lettuce (*Lactuca virosa*), a plant growing wild in the neighbourhood of hedges and old walls. It is readily distinguished from the cultivated variety by the shape of its leaves and the purple-red colour of the stem.

The lettuce is at present but little used in medicine, although by some it is regarded as one of the most valuable of our native plants, the dried juice constituting an excellent substitute for opium. *Lactucarium*, like many sleep-producing agents, is somewhat uncertain in its action, but it may, nevertheless, be used with advantage in cases in which the use of opium is inadmissible. The ordinary dose for an adult is from two to ten grains dissolved in spirit.

The *hop* is not much used in medicine, although it is reputed to possess sedative properties. In hot countries a hop pillow is often recommended for sleeplessness. It is occasionally used with advantage in cases of restlessness, when for any reason the use of opium is considered objectionable. The benefit said to have been obtained from it by George III. brought it for a time into more general notice.

In the form of bitter-beer the hop is an excellent remedy for dyspepsia and debility of the digestive organs.

LIME WATER AND CHALK.

As both these substances contain lime, and are used in medicine for very similar purposes, they may be conveniently considered together.

Lime, or quick lime, is usually made from chalk by strongly heating it to drive off the carbonic acid. The best lime, however, is made from white Carrara marble. Slaked lime is prepared by adding water to quick lime. Place two pounds of lime in a metal pot, pour over it a pint of water, and when vapour is no longer given off set it aside to cool. When it is cool it may be taken out, sifted through an iron-wire sieve, and kept in a closely-stoppered bottle. Slaked lime should be freshly prepared; it loses much of its activity if allowed to lie about exposed to the air. Lime water is readily prepared:—Put two ounces of slaked lime into a stoppered bottle containing a gallon of water. Shake it for a few minutes, and then place it on one side to settle. In a few hours the undissolved lime will have fallen to the bottom, and the upper clear fluid may be decanted off and used as required. It is important to keep the bottle well stoppered.

Lime is much more readily soluble in sugar-and-water than in pure water, and advantage is taken of this fact to make a saccharated solution of lime, which is twelve times as strong as the ordinary lime water. It is made as follows:—Rub up together one ounce of slaked lime and two ounces of white sugar. Transfer the powder to a bottle containing a pint of water, and shake it occasionally for a few hours. Finally draw off the clear solution and keep it in a stoppered bottle.

We need, we presume, say nothing concerning the origin of chalk. Before

being used in medicine it has, however, to undergo a little preparatory treatment, which is similar to that used in making whiting. It is reduced to a very fine powder, being ground in a mill, and it is then stirred round and round in water, so as to separate the grosser impurities by allowing them to sink to the bottom. The pure chalk which is held in suspension is subsequently allowed to subside, and is made into little cakes and dried.

Chalk mixture is made by rubbing up together a quarter of an ounce of prepared chalk and gum acacia with seven and a half ounces of cinnamon water, and then adding half an ounce of syrup.

The aromatic powder of chalk contains a large number of ingredients. It is made by mixing thoroughly eleven ounces of prepared chalk, four ounces of cinnamon bark in powder, three ounces each of nutmeg and saffron, one and a half ounces of powdered cloves, one ounce of cardamom seeds, and twenty-five ounces of refined sugar. Believers in a combined effect should have great faith in this preparation.

Lime is a constituent of both the hard and soft tissues of the body. It forms more than two-thirds the weight of bones, which, on being deprived chemically of their salts, are converted into mere flexible gelatinous masses.

A knowledge of this fact leads to the administration of lime in cases of *rickets*, in which disease there is a deficiency of earthy matter in the bones.

Lime water is a useful remedy for *vomiting*, and also for *diarrhœa*. It often proves useful in vomiting resulting from ulceration of the stomach. It should be mixed with milk, either in equal parts or in the proportion of one of lime water to four of milk. When the vomiting is incessant it may be necessary to feed the patient on this alone, until the stomach has recovered itself sufficiently to bear solid food. Small quantities of the milk and lime water are often retained when everything else is at once rejected. It is as well to begin with a tea-spoonful, or at most a table-spoonful, administering it frequently, and very gradually and cautiously increasing the dose.

Babies very often throw up their milk; in fact, they generally do so. Sometimes the milk is curdled, and comes up in lumps; sometimes it passes in this curdled condition from the stomach into the intestines, and is a fruitful source of colic, wind, diarrhœa, and consequent wasting. Children often suffer greatly from this cause. Of course in these cases attention must be paid to the dieting, and more particularly to the quality of the milk; but if no error can be detected in this direction, lime water will generally overcome the difficulty. It prevents the lumpy coagulation, and cures the vomiting, diarrhœa, and their attendant evils. One-eighth part of lime water added to the milk usually suffices, but in case of failure, larger quantities of each, even equal parts, should be tried.

In all cases in which ordinary lime water is used, one-twelfth the quantity of the saccharated solution of lime may be substituted. Under many circumstances, in travelling, for example, it is a great advantage to be able to use a concentrated solution. In many cases of simple *diarrhœa* occurring in adults, a couple of table-spoonfuls or more of the chalk mixture will restrain the over-action of the bowels; whilst for children, from five to twenty grains, according to the age, of aromatic chalk powder will have the desired effect.

MAGNESIA AND CARBONATE OF MAGNESIUM.

There are four different kinds of magnesia in common use, "heavy magnesia," "light calcined magnesia," "heavy carbonate of magnesium," and "light carbonate of magnesium," irrespective of several patent preparations.

Carbonate of magnesium is made by dissolving ten ounces of Epsom salts and twelve ounces of carbonate of soda, each in a pint of water. The two solutions are then mixed and the whole evaporated to dryness on a sand bath. The residue is digested for half an hour with two pints of water, the insoluble carbonate of magnesium is collected in a calico filter, and after repeated washing by allowing water to run over it, it is dried at a temperature not exceeding boiling point.

In the preparation of the light carbonate of magnesium, the same ingredients are used and in the same proportions, but the solutions employed are four times as weak.

Calcined magnesia is made by exposing the carbonate of magnesium to a red heat in a crucible until all the gas is driven off. Light calcined magnesia is obtained by a similar process from the light carbonate of magnesium.

The characters and properties of magnesia are so well known that it would be superfluous to enter into a detailed description of them. The two carbonates of magnesium effervesce on the addition of an acid, and are thus distinguished from calcined magnesia.

Magnesia and carbonate of magnesium are very similar in their action on the system, and are universally used as mild and agreeable aperients. They have an alkaline reaction, and might have been ranked with alkalis, but their effects are in other respects so widely different that they merit a separate consideration.

Magnesia is especially indicated in *acidity* of the stomach and *heartburn* with a tendency to *constipation*. It is of value in *disorder of the bowels* occurring in children, its mild action, freedom from taste, and anti-acid properties proving of great advantage. It is usually combined with a little rhubarb, and may be given in the form of Gregory's powder, of which the dose is for children from five to ten grains, and for an adult half a tea-spoonful. As an anti-acid, magnesia is preferable to the carbonate, as the latter, by giving off a quantity of gas, distends the stomach. The dose of either form of magnesia or the carbonate is, as an anti-acid, from ten to twenty grains, and as a purgative twenty to sixty grains. It must be remembered that the bulk of the light preparations is much greater than of the others. The medicine may be conveniently taken in water or milk and water.

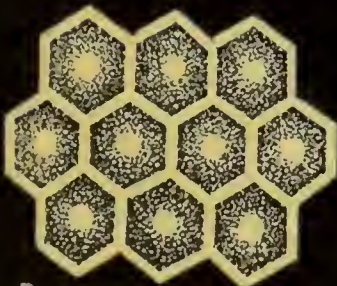
Magnesia is an extremely insoluble salt, and when used as a purgative, either in excessive doses or too frequently, is apt to accumulate in the intestines and give rise to very unpleasant symptoms. A lady, subject to attacks of gravel, took every night for a period of two years and a half from one to two tea-spoonfuls of calcined magnesia. At the expiration of that time she began to suffer from pain and tenderness in the left groin, which was found to be associated with a deep-seated tumour, which could be indistinctly felt on pressure. This was followed by constipation, alternating with spasmodic action of the bowels, incessant straining, and a highly irritable state of the stomach. In one of these attacks she evacuated a number of



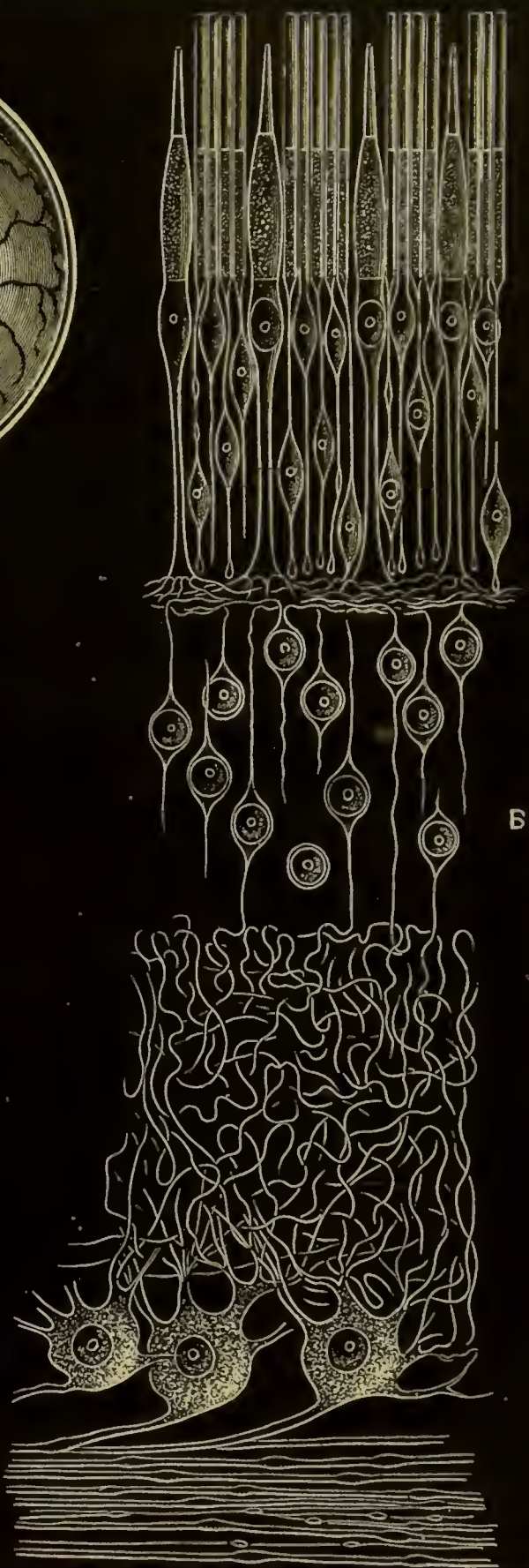
A



C



D



B

A. Posterior half of the retina of right eye. (*Henle.*) Twice natural size.
 B. Nervous elements of the retina. (*Schultze.*) Highly magnified.
 C. Structures of the cornea. (*Bowman.*) Highly magnified.
 D. Pigment cells of the choroid. Highly magnified.

soft brown lumps, which on examination were found to consist entirely of magnesia she had swallowed, bound together by the secretion of the intestine. The tumour was found to have disappeared, and the lady rapidly recovered. Another patient, however, was less fortunate, for a post-mortem examination made six months after she had abandoned the use of the drug disclosed in her abdomen the presence of a mass of magnesia weighing nearly five pounds.

The solution of citrate of magnesium (*limonade purgative*) forms a mild aperient draught suitable for children and delicate persons, especially where there is irritability of the stomach. The following is its mode of preparation:—Dissolve 200 grains of citric acid in a pint of water, and having added 100 grains of carbonate of magnesia, stir until it is dissolved. Filter the solution into a soda-water bottle, add a table-spoonful of syrup of lemons, then introduce forty grains of bicarbonate of potash in crystals, and immediately close the bottle with a cork, which should be secured with wire or string. The dose is half a tumblerful or more.

MARSH MALLOW—HOREHOUND—ELECAMPAGNE—COLTSFOOT—LIQUORICE.

There are several medicines which, though seldom prescribed by doctors, are yet not unfrequently employed in the treatment of coughs and colds. Some of the commonest of these we have enumerated above.

The *Marsh Mallow* (*Althæa officinalis*) is common in many parts of England, growing chiefly in marshes near the sea. In general appearance it closely resembles the common mallow or “bread and cheese.” The flowers are of a pale rose colour, and appear in short clusters from the bosom of the leaves. The root is the part usually employed for medicinal purposes. It is long, round, branched, and of about the thickness of the finger. It is naturally of a dirty white colour externally, but is sometimes peeled, so as to expose the pure white interior. It has no odour, but a bland mucilaginous taste. It is greatly esteemed by the French, who use it in the form of the *pâté de guimauve*. In this country it is commonly taken as a syrup, which is prepared as follows:—Macerate one and a half ounces of marsh mallow root, dried and sliced, in one pint of cold water for twelve hours. Press out the liquor, and strain through linen. Then add three pounds of sugar, or twice the strained liquor, and dissolve with a gentle heat. Lastly, when cold, add half a fluid drachm of rectified spirit to each ounce. The dose is from a tea-spoonful to a table-spoonful.



Fig. 13.—*ALTHÆA OFFICINALIS*.

The *Common Mallow* possesses properties similar to those of the marsh mallow. An infusion of the root sweetened with sugar forms a useful drink when the throat is dry and sore.

The *Horehound* (*Marrubium vulgare*) is not a common plant in England or Ireland, and is still more rare in Scotland, although in a few particular localities it is found in great abundance. It enjoyed a great reputation with our ancestors for



Fig. 14.—MARRUBIUM VULGARE.

the cure of coughs and colds of all kinds. Their favourite preparation was "horehound tea," which was made by covering an ounce of the plant with a pint of boiling water. It was taken in wine-glassful doses. The syrup of horehound is prepared by adding sugar to the infusion, and the candied horehound of the shops is supposed to be made by evaporating this down until it becomes solid.

Coltsfoot (*Tussilago farfara*) is one of the commonest of our native plants, being found in profusion in most parts of the kingdom. From the earliest times it has had a reputation for the cure of coughs. Its name is said to be derived from the resemblance borne by the heart-shaped, small toothed leaves, to a colt's hoof. A decoction is commonly made by throwing a handful of the leaves into two

pints of water, and boiling them down to one pint. The dose is a tea-cupful. The ancients preferred smoking it, and even in some parts of England this method is still adopted; for the so-called "British herb tobacco" consists chiefly of coltsfoot. A nostrum which for many years was sold as "essence of coltsfoot" contained not a particle of the substance from which its name was derived.

Elecampagne (*Inula helenium*) is a large herbaceous plant having coarse yellow composite flowers. In properties it is allied to senega. The root is used in the form of decoction, prepared by boiling half an ounce in a pint of water. The dose is from two to four table-spoonfuls. The article which for the last five-and-forty years has been sold in the shops in London as elecampagne is not a fluid but a solid, composed principally of sugar, coloured with cochineal. This having been melted by heat is poured into shallow tin dishes, and allowed to cool so as to form a hard brittle cake of about an eighth of an inch in thickness.

Liquorice is an extract prepared from the root of the common liquorice. The black cylindrical or flattened rolls, in which we usually buy it, are well known. The greater part is imported from Spain, and is well known as "Spanish liquorice." When allowed to dissolve slowly in the mouth it may serve to ease a tickling cough.

MERCURY, OR QUICKSILVER.

No mention is made of mercury in the Old Testament, but we are told on the authority of an Oriental writer that the Egyptian magicians, in their attempts to perform the miracles of Moses, employed wands and cords containing mercury, which when warmed by the sun imitated the movements of serpents. It is said, too, that

the priests of Memphis were acquainted with its physical properties, and employed it as a means of conveying motion to the images of the gods in their temples.

The metal has, in its time, received many names. "Hydrargyrum," "argentum vivum," and "quicksilver," are terms by which it has at different periods of its history been known, whilst the name mercury was applied to it on account of its volatility, and in reference to him who was at once the messenger of the gods and the patron of thieves, pickpockets, and all dishonest persons. In alchemy it was known by the symbol ☿, a sign which is still occasionally seen on the large red and blue show bottles in the chemists' windows.

Mercury itself is occasionally found in the metallic state in the form of globules, but occurs more frequently as sulphide of mercury or native cinnabar. It is found in China, but the principal mines are those of Idria in Carolina, and Almaden in Spain. Large quantities have of late years been obtained from California.

Quicksilver, unlike other metals, is a liquid at ordinary temperature, and is remarkable for its weight and beautiful silver colour and lustre. At very low temperatures it freezes, and may be obtained in the solid form, whilst, when very strongly heated, it is converted into a colourless gas. It readily combines with metals to form what is known as an amalgam, a property of which advantage is taken in the extraction of the precious metals. Its purity is shown by its brilliancy and great mobility, the slightest speck of adhering dirt or dust being readily detected. It is usually purified from mechanical admixtures by squeezing it through a pocket-handkerchief or piece of wash-leather, or by filtering it through a pin-hole in a sheet of paper. Quicksilver when contaminated by metallic impurities rapidly tarnishes on exposure to the air, and the presence of lead, tin, or zinc may be suspected if a little globule rolled along a smooth dry sheet of paper, instead of preserving its spherical form, becomes partly adherent, and leaves behind it a "tail" or smudge.

The injurious effects resulting from prolonged exposure to the vapour of mercury are well known. They are observed in water-gilders (who plate with gold dissolved in mercury), looking-glass silverers, barometer makers, workmen employed in quicksilver mines, and others exposed to the emanations of mercury. In most cases it induces a remarkable affection of the nervous system, manifested by the production of "shaking palsy" or the "trembles." The first symptom is usually unsteadiness of the arm, succeeded by quivering of the muscles, and this at last becomes almost convulsive in its character. The tremulous hand can be no longer directed with precision, and after a time can scarcely convey food to the mouth. An old writer, describing the case of one of his patients, says, "he could not, with both his hands, carry a glass half full of wine to his mouth without spilling it, though he loved it too well to throw it away." Soon the legs are affected and begin to shake, especially at the knees, so that in walking they tremble and dance about almost as if they were hung on wires. The speech is hurried, staccato, and stammering, and in extreme cases there is disturbance of the intellect. In addition to the excessive debility there is complete loss of appetite, with obstinate constipation. When the disease attains its greatest intensity the unfortunate sufferer presents a most pitiable aspect. In constant tremulous commotion, tottering, trembling, shaking, and

stuttering, he is almost helpless. He can hardly walk or talk, he dare not touch any object for fear of breaking it or letting it fall, and on raising his agitated hand with food to his mouth he misses his aim and inflicts involuntary blows on his face. He must be fed and clothed like a child. Some unfortunates deprived of assistance have been known to crawl on all fours, and seize their food with the lips, like the lower animals.

Many years ago an English man-of-war received on board several tons of quicksilver saved from the wreck of a vessel near Cadiz. In consequence of the rotting of the bags, the mercury escaped, and the whole of the crew became more or less affected. In the space of three weeks 200 men were struck down by it, two died, and all the animals—cats, dogs, sheep, fowls, a canary bird, nay, even the very rats, mice, and cockroaches—were destroyed. Early in this century there occurred another instance of poisoning by mercury vapour on a still larger scale. A fire broke out in the quicksilver mines at Idria, near Trieste, and above nine hundred persons in the neighbourhood were attacked with the “trembles.” Of late years the disease has in this country greatly diminished in frequency—water gilding, the most dangerous trade in which mercury is employed, having been in a great measure superseded by electro-plating, which is comparatively innocuous. Looking-glass silvering may be conducted in large, well-ventilated apartments, furnished with special means for preventing the diffusion of the metallic particles, with comparative safety, provided always that the workmen are employed only at intervals, and are temperate and careful. But when these conditions are disregarded—especially if the men are kept continuously at the work—the symptoms already described make their appearance in all their horrible intensity.

For the cure of this complaint the complete removal of the sufferer from his noxious employment is absolutely necessary. He should resort to frequent ablutions, and should, if possible, obtain a change of air. Sulphur taken both internally and in the form of sulphur baths, should be used to free the system from the mercury, and electricity and galvanism should be judiciously employed under medical supervision.

Mercury is seldom given internally in the metallic state. It has been proposed as a solvent for silver coins, accidentally swallowed; but this mode of treatment, we should imagine, would receive neither the approbation of the medical attendant, nor the consent of the patient. Formerly pounds and pounds of quicksilver were given in obstruction of the bowels, it being supposed that by its mechanical action it would succeed in breaking through the impediment. It almost uniformly proved useless, and there are now fortunately at our disposal other means which have entirely superseded this crude and unscientific mode of treatment. In the reign of Charles II. quicksilver was much used by ladies, in doses of a small tea-spoonful night and morning, to remove freckles and beautify the complexion. Water which had been boiled with mercury was at one time given for the expulsion of worms. It was not successful, probably for two reasons—in the first place, mercury is perfectly insoluble in water; and secondly, it exerts no influence at all on worms. This last statement is proved by the fact that people who are salivated with mercury are not cured of their worms; and, moreover, these parasites

have been often found in the bodies of those who have spent their whole lives working in the quicksilver mines.

It will be seen that mercury taken into the stomach in the metallic state produces no noxious effects, although a small dose of one of its salts might readily affect the system. Sometimes, however, the metal when long retained in the bowels undergoes some chemical change, and then suddenly produces its full effects on the system.

The different preparations of mercury are usually employed either as purgatives or with the view of bringing the system under the action of the drug. To obtain the purgative action one large dose is, as a rule, administered, whilst to ensure the constitutional effects small doses are given frequently. The prolonged use of mercury is attended with the production of a condition known as "mercurialism." This is characterised by a metallic brassy taste in the mouth, slight redness and swelling of the gums, and tenderness of the teeth, a fetid breath, and an increased flow of saliva. If the use of the drug is still continued a condition known as "salivation" or "ptyalism" rapidly succeeds. The mouth becomes violently affected, the gums are inflamed and ulcerated, the teeth are loosened, the tongue is swollen to such an extent that it hangs out of the mouth, incapacitating the patient from either eating or speaking; the salivary glands are enlarged, very painful, and inflamed, whilst the saliva is secreted so freely that it flows most copiously from the mouth. In cases of profuse salivation the amount of saliva secreted is very great, the fluid pouring from the mouth almost continuously. In one case as much as sixteen pints are said to have been collected in twenty-four hours. In addition to these by no means trifling symptoms, the patient often suffers from severe neuralgic pains in the jaws, a general feverish condition, and a profuse diarrhoea.

It must be clearly understood that these symptoms are caused only by the abuse of mercury, and that all the beneficial effects of the drug may be obtained without the production of salivation. Salivation is a distinct evil, and its occurrence can always be guarded against by immediately discontinuing the medicine on the occurrence of the slightest tenderness of the gums. In years gone by it was thought that no beneficial action could be derived from mercury unless the patient were thoroughly salivated, and the quantity of saliva to be excreted before the use of the drug was discontinued was often fixed by the physician.

There are many circumstances which influence the production of salivation. Some people are extremely susceptible to the action of mercury, a dose which on the majority of people would have no effect producing in them profuse salivation. There are people who are at once salivated by a three-grain calomel pill, just as there are people who can never eat a mutton chop without suffering from symptoms which rival in intensity those of Asiatic cholera. Truly what is one man's meat is another man's poison. As might be supposed, weak feeble individuals are more easily affected than the strong and hearty. Children, however, usually resist in a very remarkable manner the action of mercurials, and are rarely salivated. Illness, too, influences the operation of mercury, for in inflammation it is well borne, whilst Bright's disease and affections of the kidney generally render the system very sensitive to the action of the drug, which in these cases should be given, if at all, with the utmost caution.

Salivation is usually caused by the prolonged and injudicious use of mercury, but not always, for there are several other drugs which exert a similar influence on the salivary secretion. Foremost among them is a South American plant known as *jaborandi*, whilst preparations of arsenic, of antimony, and of copper occasionally exhibit this property. There is, too, a condition known as "spontaneous," or "idopathic" salivation, salivation, that is, occurring without any obvious cause. A French physician relates the case of a patient who had been under observation for nine years, and had during the whole of that time spat from eight to nine pints of saliva daily.

As we have described with some minuteness the symptoms of salivation, and pointed out the evil effects resulting from the abuse of mercury, it is only fair that we should speak of the means at our disposal for the alleviation or cure of this condition should it unfortunately occur.

In the first place a man who is salivated is in no fit condition to go out. During the whole time that his mouth is sore he must confine himself to the house, take light but nourishing food, regulate the state of the stomach and bowels, and above all avoid taking cold. Occasionally he should suck a chlorate of potash lozenge, and gargle his mouth and throat with the alum gargle (Pr. 81). Iodide of potassium possesses the power of eliminating mercury from the system, and the mixture (Pr. 32) should be taken three times a day. When the secretion of saliva is very copious, tincture of belladonna often proves useful. The patient's strength must be supported, and a change of air is usually advisable.

We must now consider in detail the different preparations of mercury, and the combinations which it forms with other elements. No one desirous of bringing the system under the influence of mercury would think of taking a spoonful of quicksilver, any more than he would undergo a course of iron by swallowing nails, or taking a bite out of the poker. The metal must be given in some form in which it can be assimilated and absorbed into the system.

Grey Powder.—In this the mercury is intimately mixed with chalk, and exists in a state of fine subdivision. It is made by rubbing up in a mortar one ounce, by weight, of mercury, with two ounces of prepared chalk, until the metallic globules can be no longer seen, and the mixture has acquired a uniform grey colour. When the drug is made on a large scale labour is economised by placing the ingredients in a cask which is rapidly rotated on an axis. It is probable that the chalk and mercury are not chemically combined, but are merely in a state of intimate mechanical admixture. Grey powder is insoluble in water, but any acid, such as a little vinegar, will soon dissolve up the chalk with effervescence, leaving behind a residue which, on examination with a lens, is found to be composed of minute globules of quicksilver. The ordinary dose of grey powder is, for adults, from three to eight grains, but for children much smaller doses are often given. It should never be made up into pills, for the contraction of the substance which must be added to it to make it consistent frequently squeezes out the mercury, which then collects in large globules in the interior of the bolus. It should always be given in powder either alone or, if necessary, mixed with a little rhubarb. Prs. 71 and 72 are useful combinations for children. It will be noticed that the dose contained in the first powder is very much smaller than in the second. As already explained,

we give a large dose when we require the purgative action, but we obtain the constitutional effects by the frequent administration of small doses. The powder containing rhubarb is a purgative—the other is not.

Blue Pill or *Mercurial Pill*, like the last preparation, contains mercury in a state of minute subdivision. This is, undoubtedly, the oldest, as well as the most popular form of mercurial pill, and is said to have been first introduced by Francis the First, King of France.

It is made by rubbing together mercury, confection of roses, and powdered liquorice root. Steam power is now employed for this purpose, a considerable advantage, as the efficacy of the pill depends on the extent to which the mercury is subdivided. A blue pill may be given either for its purgative properties, or for its effects on the general system. The practice of taking a blue pill at night, followed by a black draught in the morning, is a very popular form of obtaining a purge. It must never be forgotten that “blue pill” is a mercurial preparation, and that its constant use may possibly cause salivation, and the other symptoms which arise from the over-action of mercury.

The constitutional symptoms of mercury may be induced by taking blue pill with opium (Pr. 62); the opium neutralises the purgative properties of the mercury.

Mercurial Ointment, or blue ointment, as it is often called, has been in use for over 1,000 years. It is made by rubbing up mercury with lard and suet, until the globules are no longer visible even under a lens. The preparation is effected by machinery, in consequence of the difficulty experienced in sufficiently subdividing, or, as it is technically termed, “killing” the mercury. Unfortunately this preparation is often, to say the least of it, carelessly made. A portion of the mercury is omitted, and the requisite depth of colour is obtained by the addition of Prussian blue. The ointment is of course for external application only. It is used not only locally to tumours of various kinds, but also as a means of affecting the constitution. When the latter object is desired a piece of ointment about the size of a walnut should be rubbed into the skin night and morning. It matters little to what part of the surface the ointment is applied, supposing the skin to be moderately thin; but the regions most generally selected are the arm-pits and the inside of the thigh. It is better for the patient to rub in the mercury himself, as by that means none of the ointment is lost, but should another person be the operator he should protect his hand with a leather glove. Moderate warmth and the occasional use of the hot bath render the skin supple, and promote the absorption of the drug.

Quite recently a preparation known as “oleate of mercury” has been introduced, which threatens to prove a formidable rival to our old friend the “blue ointment.” Oleic acid is one of the constituents of common fat, and the oleate of mercury consists of the recently precipitated oxide of the metal dissolved in this acid. The solutions of oleate of mercury are made of three different strengths. The 5 per cent. solution is a perfectly clear, pale yellow liquid, resembling olive oil, but thinner; the 10 per cent. solution is also fluid and perfectly clear, but as dark as linseed oil; whilst the 20 per cent. preparation is an opaque yellowish unctuous substance, which readily melts with the heat of the body and forms a kind of transparent colourless

varnish when applied to the skin. These preparations are cleanly and economical, and have a much greater diffusibility or penetrating power than the old mercury ointment, for they are absorbed by the skin with great promptitude, and rapidly manifest their remedial powers. They are used in all cases in which the blue ointment proves beneficial. They are not rubbed in like ordinary liniments, but should be painted on the part with a brush, or lightly spread over with the finger. They are extremely useful for inducing the action of mercury on the system. A piece of the 20 per cent. ointment about the size of a large bean placed in the patient's arm-pit night and morning, for five or six consecutive days, rapidly and easily, and without any sign of uncleanness, produces in a mild form the constitutional effects of mercury. "Shoemaker's Oleates" are the best.

Mercury Plaster contains one-third of its weight of mercury, and is employed chiefly as a stimulant in old standing swollen joints and other similar cases.

Calomel is a subchloride of mercury, and differs chemically from corrosive sublimate only in containing an atom less of chlorine. It was used at a very early period by the Hindoos, and was largely prescribed by them internally. It occurs native in Spain, and is there known as native calomel, or horn mercury.

It is usually prepared artificially from sulphate of mercury and common salt. A little corrosive sublimate is always formed in the process, and is removed by frequent washing with water. The importance of freeing the drug from this impurity is very great, as the corrosive sublimate is an active poison when administered in doses in which calomel is usually given.

Calomel is a dull white, heavy powder, almost tasteless, and perfectly insoluble in water, which last property is, as we have seen, turned to account in its purification.

Calomel may be ranked among the milder preparations of mercury, and is most frequently employed for its purgative properties. It often produces in children the so-called "calomel stools," or green motions. It is frequently given in combination with other purgatives, particularly as the compound calomel or "Plummer's pill," which contains, in addition to the calomel, antimony, guaiac resin, and castor oil. When a simple purgative calomel pill is required, Pr. 61 may be used, the henbane preventing griping or any unpleasant consequences. When it is desired to employ calomel for purposes apart from its purgative action, the calomel and sugar powders (Pr. 73) may be employed.

Calomel is undoubtedly poisonous in large doses, but considerable quantities have nevertheless been taken on several occasions without unpleasant symptoms. In one case an ounce of calomel was swallowed by mistake, and was retained on the stomach for two hours before the error was discovered. The only effects noticed were slight nausea and faintness. Subsequently an emetic was administered, the calomel was vomited up, and the patient was quite well on the day but one following. In this case the drug appears, by some fortunate combination of circumstances, to have remained in the stomach unabsorbed.

When mixed with lime-water, calomel forms the well known "black wash," which is frequently used as a local application to sores of a specific nature.

Black Wash.—Calomel, thirty grains; lime water, half a pint. Mix to form a lotion. The bottle must be well shaken before each application. Label it "poison."

Corrosive Sublimate is known chemically as perchloride of mercury. As usually sold it is a heavy, semi-transparent, crystalline mass, freely soluble in water, and having a strong metallic taste. It is a powerful irritant poison, although in extremely small doses it is a most valuable medicine. From three to five grains will kill an adult. The symptoms produced by large doses come on almost immediately, sometimes even in the very act of drinking the poison. A strong metallic taste is perceived in the mouth, and is followed by a feeling of constriction and burning heat, extending from the throat to the stomach. In a few minutes excruciating pain is felt over the abdomen, accompanied by profuse purging, and incessant vomiting of matters tinged with blood. The pulse gradually fails, and in a few hours death is ushered in by fainting, convulsions, or general insensibility. The symptoms of poisoning by corrosive sublimate at first closely resemble those of Asiatic cholera, but should life be prolonged for some days the resemblance to dysentery is more striking. It is now used as an antiseptic in surgical operations.

We shall have frequently to refer to the administration of this salt when speaking of the medicinal uses of mercury. The ordinary dose is from $\frac{1}{100}$ to $\frac{1}{4}$ of a grain. The corrosive sublimate mixture (Pr. 48) may be employed. The dose for a child is a tea-spoonful given frequently.

The best antidote in cases of poisoning by corrosive sublimate is white of egg, the contents of one egg being sufficient to neutralise about four grains of the poison. A few years ago, a celebrated chemist, whilst lecturing, inadvertently swallowed, instead of water, a mouthful of a concentrated solution of corrosive sublimate. Immediately perceiving the error, he sent for some eggs, which were fortunately procured in a few minutes. The whites were at once taken, and the sufferer, although the poison was retained, ultimately recovered without any material harm. Had it not been for the prompt use of the albumen, he would almost infallibly have perished.

What to do in Poisoning by Corrosive Sublimate.—1. Send for the doctor. 2. Swallow the contents of several eggs. 3. If eggs are not procurable take milk or flour and water. 4. Take as an emetic in hot water, either (1) a table-spoonful of ipecacuanha wine, (2) half a drachm of sulphate of zinc, or (3) a table-spoonful of mustard, or (4) the emetic draught (Pr. 27) may be used.

White Precipitate or *Ammoniated Mercury* is made by adding ammonia to corrosive sublimate. It is an opaque white powder, quite insoluble in water. It is not used internally in medicine, but is, unfortunately, too frequently employed by those who, weary of life, forget the canon fixed against self-slaughter. The dilute white precipitate ointment (Pr. 89) is frequently used as an application in skin diseases, and more particularly for the destruction of lice and other parasites.

Red Iodide of Mercury is a crystalline powder of a beautiful bright vermilion colour. It is not soluble in water, but dissolves freely in the iodide of potassium mixture (Pr. 32). Respecting its action on the system we have little to say, as it so closely resembles in this respect corrosive sublimate.

The applications of the different preparations of mercury to the treatment of disease are very numerous—in fact, mercury is one of the most valuable drugs at our disposal.

The calomel ointment proves very efficacious in the treatment of many forms of *itching*. The annoying itching which accompanies many skin diseases may often be allayed by this preparation. In the itching from nettle-rash, however, it is usually useless. The ointment is of great service in allaying *itching in the region of the back passage*. This affection is often troublesome to cure, and its existence not only most effectually prevents the sufferer from going into society, but really renders life miserable. A remedy such as this is a boon.

The different preparations of mercury are of great service in the treatment of *disorders of the stomach occurring in children*. In these cases considerable care is required in the selection of the appropriate remedy, and we shall therefore describe the indications for each preparation somewhat fully.

Sometimes a particular form of *vomiting* is met with in very young children, generally in those only a few weeks old, the characteristic feature of which is its suddenness. Immediately the milk is swallowed it is forcibly shot out from both nose and mouth, either curdled or uncurdled, and apparently without any retching or effort on the part of the child. Diarrhœa may co-exist, but there is usually constipation. This affection often proves both obstinate and dangerous, for all the food being rejected the child is reduced almost to a skeleton, and dies actually of starvation. This condition, after resisting all other remedies, can frequently be cured by giving one of the "sugar and grey" powders (Pr. 71) every two hours.

In the *diarrhœa* of children mercury is extremely useful. Cases of the following kind are often met with; every mother knows them. The baby is poorly, his digestion is bad, and he suffers all day long with the wind, and very often passes three or four nasty, pale, pasty, stinking motions, which look just like a piece of clay. One of the "sugar and grey" powders given every hour for a day or two will restore the motions to their natural colour, and cut short this condition, even should it have existed for weeks.

Then, again, there is another kind of diarrhœa to which children are subject. The stools are slimy, mixed with blood, and often passed with a good deal of pain and straining. Sometimes the slime is very tenacious, and being covered with blood looks like a piece of flesh. It is best treated by tea-spoonful doses of the corrosive sublimate mixture (Pr. 48) given hourly or oftener. This method will cure the complaint even after several months' duration.

Infants not unfrequently suffer from chronic diarrhœa, in which the stools—ten or a dozen of which may be passed in the day—are watery, muddy-looking, or green-coloured, and extremely offensive. This condition may be restrained by the "sugar and grey" powders, given at first every hour, and then every two or three hours, according to the frequency of the stools. The occurrence of vomiting is an additional indication for this mode of treatment. Although the diarrhœa can be arrested, yet the disease may have persisted for so long a time that a serious injury may have been inflicted on the stomach, so that food can be neither digested nor absorbed, and the child, in spite of every effort, gradually wastes away.

Infantile Cholera is an extremely fatal disease, running so rapid a course that the child soon assumes a death-like aspect, and is in a very critical condition. It is characterised by incessant sickness, and by almost continuous diarrhœa, the

motions being copious and offensive, and either watery and almost colourless, or of a dirty muddy aspect. It is essential to check this condition as speedily as possible, and this can be usually accomplished by giving one of the "sugar and grey" powders every half hour, until relief is obtained.

In that form of diarrhœa in which the child passes large offensive stools, evidently composed of decomposed milk, mercury proves of little use.

Chronic Diarrhœa occurring in adults will, if the stools are pale and watery, yield to tea-spoonful doses of the corrosive sublimate mixture taken every two or three hours.

Similar treatment proves beneficial in *dysentery*, when the stools are slimy and contain blood. The corrosive sublimate mixture taken as directed, in tea-spoonful doses, will usually remove the blood and slime, although the use of some other diarrhœa medicine may have to be resorted to before the disease is entirely cured.

In *typhoid* or *gastric fever* the sugar and calomel powders may be given every two hours with advantage. The earlier this mode of treatment is commenced the more likely is it to prove beneficial. It usually lessens the height of the fever, shortens its duration, and checks the diarrhœa. Care should be taken not to salivate the patient, and on the slightest indication of tenderness of the gums the medicine should be at once stopped.

Occasionally children are met with some three months old, or it may be younger, who have become emaciated, pale, fretful, and shrivelled in the face till they look like little old men. They suffer from "snuffles," or obstruction of the nose, so that they are obliged to keep the mouth open, and sucking is with them almost an impossibility. They have generally an eruption on the skin, particularly about the soles of the feet and on the buttocks. There is often inflammation at the corners of the mouth, and very frequently the eyes are also affected. They will rapidly improve if a grain of grey powder be given three times a day with a little sugar. It never in this dose purges, but, on the contrary, if diarrhœa be present, it frequently checks it. A little piece of the calomel ointment passed into each nostril will usually cure the "snuffles," and remove the difficulty in breathing. In these cases, however, it is, as a rule, advisable to obtain the advice of a medical man.

People who suffer from *biliousness* often obtain relief by taking calomel. When the bowels are at the same time confined, it is a good plan to take one of the calomel pills at bed-time; but when there is no attendant constipation, it is better to take one of the calomel powders, or one of the "sugar and grey" powders three or four times a day. These powders are especially adapted for those who frequently suffer from this condition, and in whom the constant employment of the pills would produce depression and possibly salivation.

The *white-furred tongue*, often seen in people who suffer from indigestion, may be readily cleaned by one of the sugar and grey powders taken three or four times a day. The *nasty taste in the mouth*, which is so frequently an accompaniment of this condition, may be removed by the same means.

The sugar and grey powders taken hourly are extremely useful both in *scarlatina* and *quinsy*, when the tonsils are so large as almost to meet, and when the

patient is unable to swallow, and is in great distress from the difficulty in breathing. The swelling is reduced in a few hours, and all danger is over.

These powders act with almost equal promptness in *mumps*, speedily relieving the swelling and pain of this affection.

Mercury is our great remedy for syphilis; by far the best remedy we have. If you are suffering from this disease, the best thing you can do is to go to a doctor at once. We do not believe in self-treatment in these cases, but as you may be possibly so situated that you cannot obtain personal medical advice, we will indicate the line of treatment which must be adopted. In the first place, you must do your utmost by temperate and abstemious living, and by taking plenty of exercise, to support your general health. Then you must take mercury—this is indispensable. It matters little in what form you take it, but take it you must. You may take a couple of table-spoonfuls of the corrosive sublimate mixture (Pr. 48) three times a day, or one of the opium or blue pills (Pr. 62) twice a day, or if you do not like medicine you may rub in the blue ointment. You will have to take mercury for a long time—even after your symptoms have entirely disappeared, or they will inevitably return in some form or other. You may change your preparation of mercury occasionally, but you must take especial care not to salivate yourself. Directly you perceive any tenderness about your gums, suspend the medicine for a day or two, and then begin again, taking it less frequently, or in smaller doses.

MINDERERUS'S SPIRIT.

This was introduced into medicine in the year 1732, and was named after Minderer or Mindererus, who was one of the first to use it. It is a solution of acetate of ammonia, and is made by adding acetic acid to carbonate of ammonia. It is a colourless fluid without odour, but with a strong saltish taste. It is a useful and at the same time a very safe preparation. It is often given in fevers and in febrile attacks, to keep the skin moist and cool, and to promote a flow of urine. It is useful in chills and febrile colds, but in many cases tincture of aconite (p. 758) is to be preferred. The dose of the solution of acetate of ammonia is from one to two table-spoonfuls in water every four hours. This is for an adult; in the case of a child a proportionately smaller dose would be given according to age. Sometimes it is applied externally as a wash for bruises and inflamed parts. It enters into the composition of the ordinary saline draught, of which the following is an example :—

Solution of acetate of ammonia	...	...	3 drachms
Sweet spirits of nitre	...	...	20 drops
Water, to an ounce.			

This may be taken every three or four hours. It is cooling but not purgative.

This is another good saline mixture, containing acetate of potash instead of acetate of ammonia :—

Acetate of potash	...	...	15 grains
Spirit of juniper	...	...	10 drops
Decoction of broom	...	...	1 ounce.

To be taken every four hours. It will be found to promote powerfully the action of the kidneys.

MORPHIA, OR MORPHINE.—See OPIUM, p. 869.

MUSTARD.

There are two different species of mustard used for medicinal purposes, one having white and the other black seeds. Both varieties grow wild in the fields, and have been cultivated in most parts of Europe from time immemorial. Both kinds have yellow flowers, those of the white mustard being larger than those of the black. When crushed and sifted both seeds yield the flour of mustard, the best being obtained from a mixture of the two seeds. Mustard is commonly adulterated with flour, turmeric and capsicum powder being added to imitate the natural colour and pungency. When dry it has but little smell, but when moistened it evolves a pungent, penetrating odour, which proves very irritating to the eyes and nostrils. It is extensively used as a condiment, and probably assists the assimilation of many foods which are digested with difficulty. In larger quantities it acts as an emetic, and from being always at hand is frequently used for evacuating the stomach in cases of poisoning. From a tea-spoonful to a table-spoonful of mustard flour should be added to a tumbler of tepid water, and taken without delay. Cases of obstinate, and even dangerous, *hiccup* have been promptly cured by drinking an infusion of mustard, made by steeping a tea-spoonful of mustard flour in a tea-cupful of boiling water for twenty minutes, and then straining.

In the form of a poultice, mustard applied to the skin acts as a valuable counter-irritant. A mustard poultice is made by mixing equal quantities of linseed meal and mustard flour with a little hot water, and stirring them well together. The linseed and mustard should be thoroughly mixed before being added to the water. Some people add vinegar, but this is a mistake, as it retards the production of the essential oil, on which the irritating properties depend. Care should be taken that the water employed in making the poultice is not too hot.

A mustard poultice can seldom be borne longer than twenty minutes, and people with delicate skins are often unable to endure it even for this time. It should never be allowed to produce a blister, as they are usually very troublesome to heal. Not unfrequently, strong mustard poultices are applied to the calves of the legs in cases of *concussion of the brain*, *apoplexy*, &c. It must be remembered that the patient being insensible is incapable of expressing pain, and that unless we are careful to remove it in time, the mustard may form a large blister, which in a person debilitated by disease may be followed by the most serious consequences.

Mustard may be used externally in all cases in which cantharides proves useful, and the formation of a blister is not necessary. Thus it is useful in *bronchitis*, *pleurisy*, and *inflammation* of the lungs. In these cases the whole chest or back should be covered with the poultice, as the larger the tract of skin irritated, the greater is the influence exerted on the organs beneath. The mustard paper or mustard leaves now so much in vogue may be used as an elegant substitute for the mustard poultice.

Added to a hot foot-bath, mustard is often used to *cut short a cold*, to

relieve headache, and to arrest the progress of inflammation in any of the internal organs.

In women in whom the periods have been suddenly arrested, a mustard hip-bath used for a few days before the next expected time will often suffice to restore the function.

NITRO-GLYCERINE, GLONOINE, OR TRINITRINE.

The somewhat fanciful appellation of glonoine has been applied to the substance usually known as nitro-glycerine. It is a heavy, oily-looking liquid, almost insoluble in water, but dissolving in alcohol or ether. It is made by the action of nitric and sulphuric acids on glycerine. Its preparation is attended with considerable danger, as a slight blow or concussion would cause it to explode with destructive violence.

Nitro-glycerine exerts a powerful influence over the animal economy. Thus, if a single drop be added to 99 drops of rectified spirit, and two drops of the mixture be placed upon the tongue, it may produce very startling symptoms. A gentleman who had expressed his utter unbelief in the possibility of so small a quantity of any medicine producing any appreciable result, was given, at his own request, a dose of this mixture. He says:—"After swallowing this small quantity of fluid—it could not have exceeded two drops—I asked what effects I was to expect, but was told to wait and observe for myself. I then purposely conversed on other subjects. In about three minutes I experienced a sensation of fulness in both sides of the neck, and to this succeeded nausea, and I said, 'I shall be sick.' The next sensation of which I was conscious was as if some of the same fluid was being poured down my throat, and then succeeded a few minutes of uncertainty as to where I was, during which there was a loud rushing noise in my ears like steam passing out of a tea-kettle, and a feeling of constriction around the lower part of my neck, as if my coat were buttoned too tightly; my forehead was wet with perspiration, and I yawned frequently. When these sensations had passed off, which they did in a minute or so, they were succeeded by a slight headache, and a dull heavy pain in the stomach, with a decided feeling of sickness, though without any apprehension that it would amount to vomiting. I lay on a sofa feeling rather languid, but talking cheerfully, conscious at the same time that I could very well exert myself both mentally and physically if I liked, but that it was more pleasant to be idle. This condition lasted about half an hour, at the end of which I was quite well, and walked home a distance of half a mile with perfect confidence." This gentleman appears to have been somewhat susceptible to the action of the drug, for although these symptoms usually follow its administration, yet in the majority of people a larger dose is necessary to produce them.

In Sweden nitro-glycerine is largely used in mining, under the title of "blasting oil," and during the last four years no less than ten cases of poisoning by it have occurred in that country. It has been found that the vapour of the liquid acts powerfully as a narcotic poison, and even when much diluted with air it produces intense headache.

Although nitro-glycerine is so powerful a poison, there is not the slightest reason

why we should not use it in appropriate doses as a medicinal agent. It affords another example of a drug which is at once a powerful poison and a valuable medicine.

Nitro-glycerine is one of our most valued remedies for angina pectoris (page 103). It will often give relief where nitrite of amyl has failed. It is best given in the form of the nitro-glycerine mixture (Pr. 100). "Trinitrine tabloids" can be obtained from almost any chemist, and are useful. Some people are very susceptible to the action of this drug, and it is a good plan to begin with a small dose, gradually increasing it until headache is produced.

Glonoine is a most admirable remedy for *congestive headaches*, characterised by a feeling of pulsation and throbbing. It is largely used in that form of headache induced by the sudden arrest of menstruation as the result of cold or chill. We have often given it in these cases, and have found it extremely useful. When the head feels as if it were so full that it must burst, the drug is especially indicated. A single dose usually effects a cure, but it may, if necessary, be repeated in three hours. It has been found of service in *sun-stroke*, and is occasionally used for *nervous palpitation*.

NITRITE OF AMYL.

Nitrite of amyl is a yellowish fluid, having a powerful and peculiar odour, somewhat resembling that of pine-apples. When inhaled, even in very small quantities, it produces almost immediately flushing of the face, and a sensation of pulsation all over the body. It may be convenient to have an agent which will enable one to blush at pleasure, but it must be admitted that the accompanying sensation is far from pleasant. From certain experiments made on animals with this drug it was concluded that it would exert a beneficial effect on that awful disease known as *angina pectoris*, or the suffocative breast pang. The supposition was correct, and we have now the means of curing, or at all events alleviating, a disease in the presence of which we were formerly helpless. This is undoubtedly one of the greatest triumphs of modern medicine. "Trinitrine compound tabloids" are also useful.

The amyl is, in these cases, used in the form of inhalation, for it fails to act with anything like the same certainty when taken internally in the ordinary way. A bottle containing two or three drachms is procured, and of this two or three drops are poured on a pocket-handkerchief, and gently inhaled until the effects of the drug are experienced. It is advisable for the first inhalation to be performed in the presence of the medical attendant, but subsequently the patient should learn to administer it for himself. After a time people become habituated to its use, and from five to ten drops may be poured on the pocket-handkerchief, or the bottle may be held quite close to the nose, without the production of any unpleasant symptoms. The nitrite of amyl should be kept in a stoppered bottle, but even in spite of this it after a time becomes stale and flat, and the supply must be renewed. Nitrite of amyl is an excellent remedy for those "heats and flushes" to which many women are subject. In these attacks not only does the patient feel hot, but she turns red all over. They usually last only a few minutes, but sometimes an hour or more, and they may be repeated several times a day. They are usually attended with

perspiration, which may be very profuse. In these cases the nitrite of amyl should be given according to Pr. 52. A dose should be taken every three hours, and an additional dose on the first appearance of the flush. Relief is often obtained at once, but sometimes not until the medicine has been taken for a week or more. As the patient grows accustomed to the remedy, it is often necessary to increase the dose.

NITRE OR SALTPETRE AND CHLORATE OF POTASSIUM.

These salts are familiar enough to those of us who in our youthful days devoted our energies to the study of the now somewhat abstruse science of pyrotechnicology. Both are used largely in the manufacture of fireworks.

It is to be presumed that nitre, being a natural production, was known to the Chinese and Indians, more particularly as both these intelligent races at an early period of their respective careers exhibited a remarkable aptitude for manufacturing explosive agents. Nitre is found as an exudation or efflorescence on the soil in many parts of India. It is washed out, and sent to this country in a rough state, and is here purified for use. In Europe it is prepared artificially, in what are known as nitre-beds or plantations. Refuse animal and vegetable matters are mixed with ashes and lime rubbish to form heaps, which are protected from the wet, but are exposed freely to the air. They are watered occasionally with liquid nitrogenised matter, and at intervals of about three years are washed out to obtain the nitre. The whole process, viewed chemically, is extremely interesting, but as the salt is given internally we must be pardoned for not entering more fully into detail.

Nitre crystallises in beautiful colourless striated six-sided prisms, which are readily formed by dissolving a quantity of saltpetre in boiling water and then leaving the solution to cool. These crystals have a pleasant saline taste, and when thrown in the fire, or placed on a piece of red-hot charcoal, deflagrate with an energy which acts as a reminder that they form 75 per cent. of gunpowder.

Let us now pass on to a consideration of its therapeutical applications. Of what use is it to us in the treatment of suffering humanity? It has been loudly lauded, like many another drug, in the treatment of *rheumatic fever*. It has been claimed for it that it not only shortens and mitigates an attack of acute rheumatism, but protects the heart from the baneful effects of the disease. We are sorry we cannot endorse these statements, but must confess that there are drugs of which we shall speak presently on which we should place greater reliance in the treatment of this disease (*see SALICINE*).

In case of *inability to hold the water* occurring in children, nitre often proves successful, provided always that that condition is not dependent on worms or some similar exciting cause.

In *sore throat*, saltpetre is often taken in the form of nitre balls. These are simply made by fusing the nitre and then casting it in bullet-moulds.

In cases of *rheumatism* and *lumbago* accompanied by scanty high-coloured water saltpetre should be used. In a few hours under its influence the water becomes clear and bright, and the pains then gradually subside.

If used in rheumatic fever, nitre must be employed in large doses, as much as

from half an ounce to an ounce being given in the course of the day in lemonade or barley water, sweetened to taste. In other diseases, such as rheumatism, from five to ten grains may be taken in water every hour until relief is obtained. For children the dose is from one to three grains.

Chlorate of potassium is made on a larger scale for the preparation of lucifer-matches and detonating powders by a process which practically is equivalent to passing chlorine gas through potash. When powdered up in a mortar with sulphur it detonates violently, a fact to be remembered in dispensing.

This drug finds its chief application in the treatment of diseases of the mouth. It proves of signal service in *ulceration* of the edges of the *gums* and the sides of the *mouth* and tongue. This condition, though seldom dangerous, is, to say the least of it, extremely unpleasant, and in children often proves very difficult to cure. Implicit trust may be placed in chlorate of potash in the treatment of this condition. In another troublesome complaint it often proves useful, for if taken early and frequently it will often cut short a cold. It usually quickly relieves the *hoarseness*, and stiffness in the nose, and above all the *raw feeling in the throat*.

The dose is from ten to twenty grains or more, and it may be conveniently taken in the form of chlorate of potash lozenges (Pr. 112), each of which contains five grains.

We have already seen the action of nitre and chlorate of potassium on the system when used separately; let us now consider an extremely useful application when used in combination. As every one knows, blotting-paper, dipped in a solution of nitre, and dried, forms "touch-paper," which, when ignited and allowed to smoulder away, sometimes serves to cut short an attack of asthma. Too frequently, however, these papers prove useless, and the unfortunate sufferer continues to wheeze away, and gasp and fight for his breath, until the attack has worn itself out and reduced him to a condition of utter prostration. By the addition of chlorate of potassium to the solution used in making these papers, their utility is greatly increased. As this is a point of considerable practical importance, we must enter somewhat fully into their mode of preparation. It would be well if the papers were prepared by the asthmatic himself, or under his immediate superintendence, or, if this is impossible, they should be made by some one on whom he can place implicit reliance. The materials requisite are three in number—some large sheets of blotting-paper, and some nitre and chlorate of potassium. In the first place, some water should be put to boil in a large shallow saucepan, or other similar utensil. The porcelain dishes used by chemists are extremely useful for this purpose, particularly as they can be placed on a tripod or retort-stand, and kept hot by means of a lamp. Into the water should be thrown equal quantities of the two salts which are to be dissolved in it. There is no occasion to weigh them, but a handful of each may be thrown in as frequently as may be necessary. Whilst the water is getting hot, and the salts, aided by a little occasional stirring, are being dissolved, the paper may be cut up. The best blotting-paper to use for this purpose is the white, because it is usually thicker, and absorbs more. It should be cut or torn into pieces of about six inches square, which should be piled one on the top of the other, each mound consisting of six pieces. Whilst this process is in progress the water will have been boiling, and will have taken up as much of the salts as it can dissolve. It is essential to supply

the salts freely, so that a perfectly saturated solution may be obtained. All being in readiness, a pile of paper should be plunged in the boiling solution, and kept under the surface till it is thoroughly wet through. It is then to be taken out, and placed on a board, or better still, on a grating and allowed to drain. The solution is to be kept boiling over the lamp or fire, and as fast as one pile of paper is finished another is to be plunged into the solution. If the operator is not very expert in the matter, he had better use an old knife for fishing the paper out of the water, or he will assuredly scald his fingers. When the solution is exhausted, the process may be stopped, and attention given to the piles which have been already prepared. The different layers of paper will be found to be adherent, and the whole mass will resemble a piece of damp cardboard. The papers should then be placed in the warm—preferably in the sunshine—and allowed to dry at their leisure. If dried before the fire care must be taken that they are not ignited by an accidental spark. When dry they may be sprinkled over with a few drops of tincture of *sumbul*, spirits of camphor, or any other agreeably smelling substance.

When finished, they will be hard and stiff, and both surfaces will be studded with small acicular crystals.

The mode of using these “nitre tablets,” as they may be conveniently called, is sufficiently simple. One of them is doubled across the middle, and placed, tent-wise, on some non-inflammable substance, and then ignited at each extremity of the fold. The tablet will burn vigorously, with the production of considerable heat, and a large volume of dense smoke. Especial care must be taken not to put the tablet near the bed. It should not be lighted on a plate, as there is a risk of breaking it, but the coal-scuttle, or an old sheet of tin, may be utilised for this purpose.

Many an attack of asthma has been cut short by the employment of these papers, and their use has proved a boon to many a sufferer. The nitre papers sold in the shops are usually too weak to prove of much service in bad cases.

NUX VOMICA AND STRYCHNINE.

The *nux vomica* tree is a native of the East Indies, and grows abundantly on the coast of Coromandel, flowering during the cold season. It is a member of the venomous *strychnia* family, which, curiously enough, is botanically so closely allied to the natural orders yielding gentian and the common bark, that it has been found impossible to define any strict line of demarcation. It is a middle-sized tree, with a short, crooked, thickish trunk, irregularly branched, and covered with a smooth ash-coloured bark. The leaves are ovate in shape, shining, smooth on both sides, and marked with five distinct nerves; the flowers are small, greenish-white in colour, and exhale a strong, disagreeable odour. The fruit is round, about the size of a large apple, of a rich orange colour, filled with a soft jelly-like pulp, containing the seeds, generally five in number. These seeds are about the size of a shilling, and are covered with a soft woolly substance of a pretty grey colour. They are hollow on one side, whilst the other is convex and furnished with a boss or top-knot, so that they remind one irresistibly of a very little Chinaman's hat. They have an intensely

bitter taste, and are extremely hard—so hard, indeed, that they are powdered with the greatest difficulty, and have often to be filed down. The whole plant is pervaded with that deadly poison, strychnia, the greater portion residing in the seeds and bark. The nuts prove fatal to dogs, horses, hares, wolves, foxes, cats, rabbits, rats, birds, and in fact, so far as we know, to every living creature. It is very generally believed in many parts of the country that *nux vomica*—commonly called “rat’s-bane”—although poisonous in the case of all the lower animals, may be taken with impunity by human beings, an opinion which we need hardly say is utterly without foundation. Another and, if possible, still more absurd superstition, is that all animals born blind are protected from its influence. Powdered *nux vomica* is largely used for the purpose of destroying vermin, it, or the alkaloid strychnia, being the active ingredient in nearly all the vermin and insect-killers. It has occasioned many deaths, chiefly as the result of suicide, for, owing to its bitter taste, its presence in an article of food would be at once detected in any attempt to murder. Strychnia, though equally bitter, might possibly be given in a pill without the peculiarity of its taste being noticed.

The symptoms produced by large doses of strychnine or *nux vomica* resemble those occurring in the course of the disease known as tetanus or lockjaw. Soon after the fatal dose has been taken the patient is suddenly seized with a feeling of suffocation, and complains of great difficulty in breathing. He is restless and uneasy, and there are twitchings and jerkings of the head and limbs—a shuddering or trembling of the whole frame. Convulsions then commence suddenly—the limbs are stretched out, and the hands clenched, the head is jerked violently backwards, and the whole body becomes as stiff as a board, and is arched in the form of a bow, the patient being supported only on his head and heels. The chest is fixed by the spasm, so that breathing is for the time arrested, and the face assumes a dusky, congested appearance, with a wild, drawn, anxious aspect, the eyeballs being prominent and staring, and the lips livid. Sometimes the muscles of the face are contracted in such a manner as to make it assume a most ghastly grin. Shooting pains like electric shocks are experienced in various parts of the body, often first in the back, and then down the legs and arms. Each spasmodic attack lasts for a minute or more, and then ceases altogether for a time. Throughout the paroxysms the mind remains perfectly clear, and the patient’s sufferings are agonising. The slightest touch, a breath of air, the movement of the bed-clothes, the most trivial cause will at once excite the spasm. The consciousness of the accession of the fit is very remarkable. The patient calls out loudly, “It is coming!” and screams and shrieks, “Hold me! hold me!” In vain he seeks for relief in gasping for air and in requiring to be turned over, moved, or held. Sometimes there is frothing at the mouth, and this froth is generally mixed with blood from injury to the tongue. The muscles which move the jaw, although the first to be affected in the lockjaw of disease, usually escape till near the end in this form of poisoning. In a fatal case death is rapid; and if the patient survive two or three hours, sanguine hopes may be entertained of his recovery. The fatal termination may be due either to exhaustion from the repeated convulsions, or to suffocation from paralysis of the muscles of the chest. Death under these circumstances is indeed horrible, and

after witnessing a scene such as we have described, one naturally exclaims with the poet,

“By many a death-bed I have been,
And many a sinner’s parting seen,
But never aught like this.”

It is, in fact, unique.

What to do in Poisoning by Strychnine or Nux Vomica.—1. Send for the doctor. 2. Give an emetic of mustard-and-water. 3. Give a drachm of bromide of potassium and twenty grains of chloral in water, repeating it in half an hour if necessary.

It is very essential to keep the room quiet. When no other remedy is at hand, charcoal may be given in large quantities, or tannic acid. It is often necessary to put the patient fully under the influence of chloroform, to control the paroxysms.

For medicinal purposes, we use three preparations containing strychnine—viz., an extract of nux vomica, a tincture of nux vomica, and a solution of strychnine. These are all “*officinal*” articles—that is, they find a place in the British Pharmacopœia—and may, of course, be used in appropriate cases with perfect safety.

Nux vomica has attained a great and widespread reputation in the treatment of indigestion and disorders of the alimentary canal. It is especially valuable in the case of *people who become nervous and dyspeptic as the result of over-work*, and much mental worry. Many business people—city men, for example—who suffer from *headache, sleeplessness, weight after food, and constipation*, experience much benefit from a course of this medicine. It should be given when the food *lies like a load at the stomach*, and especially when there is *heartburn accompanied by flatulence*. The sensation of *heat and weight at the top of the head*, which is often an accompaniment of these symptoms, may also be removed by the same means. The best and most useful preparation for all these cases is the tincture of nux vomica. It may be given according to Pr. 44. This mixture will be found of considerable value in the treatment of *habitual constipation*. It is not meant that because the bowels are upon any one particular occasion confined that nux vomica is to be taken, but that when constipation is a constant source of trouble it will afford relief. It does not act as ordinary purgatives do, but gives tone to the walls of the alimentary canal, and in this way stimulates them to action. Should the inefficient action of the bowels be due to a defective secretion of bile, the motions being pale in colour, nux vomica will probably prove of little benefit. In other cases, a tea-spoonful of the mixture taken three or four times a day will prove amply sufficient to insure daily one comfortable motion. Five drops of tincture of nux vomica in a tumbler of cold water, drank slowly a little at a time whilst dressing in the morning, usually acts speedily on the bowels.

Nux vomica is one of our pleasantest bitters, and six or eight drops of the tincture taken in water or in a wine-glassful of infusion of gentian, about half an hour before meals, will improve the appetite and digestion.

In many affections of the nervous system this mixture may be employed with advantage. It often proves of benefit in *paralysis*, and even in cases in which it fails to effect a cure it may prevent the further wasting of the limbs. In these cases, two table-spoonfuls of the mixture (Pr. 44) should be taken three times a day.

Its action is very conspicuous in *sick-headache*, particularly when this common and troublesome complaint can be traced to some error in diet, or to a confined state of the bowels. It is advantageous in these cases to take a tea-spoonful dose every five or ten minutes to the extent of eight or ten doses, and then to continue the medicine at longer intervals.

It is useful, too, in *headaches* occurring in strong, robust adults, who also suffer from *giddiness, flushed face, and constipation*. In these cases tea-spoonful doses of nux vomica mixture taken frequently will prove most effectual.

The *morning vomiting and trembling of the hands* of those who over-night have dined not wisely but too well, may be controlled by the same means.

There are two other drugs derived from the same family as strychnia which merit at least a passing notice. These are St. Ignatius's beans, and the woorara poison.

The tree producing ignatia, or the seeds of St. Ignatius, is indigenous to and abounds in the Philippine Islands. The fruit is pear-shaped, and each contains about twenty seeds. Their properties were first discovered by the Jesuits, and named after their patron. These, like nux vomica, contain a considerable amount of strychnia, and it is doubtless to this substance that they owe much of their energy; although they have properties which are peculiarly their own. A tincture is usually made containing the drug in the proportion of one to ten. This should be mixed with ten times its volume of water, and of this drop-doses may be taken hourly. It is recommended in the treatment of *hysteria*, and may be given with advantage to either men or women who are hysterical. In some forms of *neuralgia* it has proved of considerable value.

The curari or woorari, although of no practical use in medicine, has recently attracted considerable attention from its employment by physiologists in the performance of experiments on animals. It was at one time said simply to paralyse the animal, and not in the slightest degree to deaden its sufferings, but there are reasons for supposing that an animal under its influence is quite insensible to pain. It is the arrow poison which is used by the Indians for the destruction of game. It is prepared by them with a great deal of mystery, and is mixed with other herbs, with red and black ants, and with the pounded fangs of a venomous snake. It, like the serpent poison, is almost inert when swallowed, but is a deadly poison when introduced into the system through a wound.

OAK-BARK—GALL-NUTS—TANNIC ACID—GALLIC ACID.

The British oak, as is well known, is a majestic forest tree distinguished above all others by the slowness of its growth, its great size and longevity, and the value of its wood. There are two distinct species of oak in England, which are known as the "pedunculate," and the "sessile." They are readily distinguished, for in the former the acorn is provided with a stalk or peduncle, whilst on the latter it is sessile or stalkless. As we have already said, the oak is a tree which attains a great age, and its wood is almost useless for the purposes of art until half a century has passed over its head. There are now oak-trees growing in this country which chronicle upon their furrowed trunks ages before the Conqueror.

The only part of the tree which is used for medicinal purposes is the bark, which is usually separated in the spring or early summer. We obtain it in pieces of one to two feet in length, which vary a little in their appearance according to the age of the stem, or branch, from which they have been taken. The bark of young stems is thin, moderately smooth, covered externally with a silvery or ash-grey cuticle, and is frequently beset with lichens; internally it is, in the fresh state, whitish, but when dried brownish-red and fibrous. The bark of old stems is thick, very rough externally, cracked and wrinkled, and it is usually of inferior quality.

The oak-bark is made into a decoction in the following manner:—Boil $1\frac{1}{4}$ ounces of bruised oak-bark in one pint of water for ten minutes in a covered vessel, then strain, and wash the bark with enough water to make one pint of the decoction. Its principal value in medicine arises from its astringent properties. It forms a perfectly safe, useful, and economical lotion, gargle, or injection. As a gargle it is useful in that common and disagreeable complaint, a *relaxed sore throat*. As an injection it is employed with advantage for all kinds of *discharges*, and its efficacy may be greatly increased by the addition of a couple of tea-spoonfuls of alum to every pint. Internally it may be given in all kinds of *bleeding from the lungs, stomach, &c.*, in doses of two to three table-spoonfuls, or more. (*See HAZELINE.*)

There is another species of oak growing in England known as the gall or Dyer's oak. It is a native of Asia Minor, but is now commonly met with throughout this country. It seldom exceeds the height of six feet, and the stem is crooked, so that it has rather the features of a shrub than of a tree. The acorn is nearly sessile, smooth, cylindrical, and is two or three times as long as its cup, which is slightly downy, and is covered with indistinct scales. This is the species which yields the nut-galls of commerce. These excrescences are produced on the young branches by a small insect which punctures the tender shoot with a curious spiral sting, and deposits its eggs in the aperture so made. In a few hours the surrounding tissues swell, a tumour is produced, and the eggs become enclosed in a fleshy chamber, which serves not only for shelter and defence but also for food, for the larvæ feeding upon the interior there undergo their metamorphosis. In fact, it is a comfortable situation with "all found." No production of nature seems to have puzzled the ancient philosophers more than galls. An old writer of repute ascribed their origin to spontaneous generation, and gravely states that weighty prognostications as to the events of the ensuing year may be deduced by ascertaining whether they contain spiders, worms, or flies. Other philosophers who knew that, excepting by rare accidents, nothing is found in galls besides different kinds of grubs, which they rationally conceived to spring from eggs, were very much at a loss to account for the conveyance of these eggs into the middle of a substance provided with no aperture. Finally they settled the question, very much to their own satisfaction, by deciding that they were insects' eggs deposited in the earth which had been drawn up into the tree along with the sap, and after passing through different vessels had stopped in the twigs, and had there hatched and produced the galls. The theory was undoubtedly ingenious, the only objection to it being that, like many a modern theory, it had no foundation in fact.

Gall-nuts are more or less globular in form, hard, about the size of a marble,

and covered externally with a number of little knobs or tubercles. There are two varieties, the blue and white galls: the former, the produce of the first gathering, before the fly has escaped from its prison, is of a blackish-blue or deep olive colour; the latter, which is of superior quality, is of a greyish colour, and is provided with a small hole by which its late tenant departed.

Both varieties of gall-nuts contain two very useful substances known as “tannic acid” and “gallic acid.” Tannic acid is obtained in the form of a light glistening spongy mass or powder, having a very astringent taste, and dissolving freely in water. Gallic acid occurs in white or pale fawn-coloured silky crystals, which are also freely soluble in water. As the gall-nuts owe their astringency to the presence of these two acids, the medicinal uses of the three bodies are almost identical.

There are few more useful medicines than “glycerine of tannic acid.” It may be obtained at any chemist’s, or made as follows:—Rub together one ounce of tannic acid and four fluid ounces of glycerine in a mortar, then transfer the mixture to a porcelain dish, and apply a gentle heat until a complete solution is effected. It should be kept in a wide-mouthed bottle with a long-handled camel’s-hair brush for convenience of application.

It is very useful in many *affections of the nose*. Thus, after measles, scarlet fever, and some other diseases, the nostrils often become sore and red and discharge freely, the secretion not only blocking up the nose and causing a disagreeable feeling of stuffiness, but also running down on the upper lip and scalding it. A single application of the glycerine of tannin with the brush will often effect a cure, although the nose should be previously thoroughly cleansed, so that the astringent may come in actual contact with the sore surface. The application should be made freely and without hesitation.

Sometimes the discharge from the nose is in young adults thick, lumpy, of a greenish colour, and very offensive in odour. The scabs may be half an inch long, and are expelled with difficulty, the unfortunate sufferer having to blow his nose over and over again before he can get rid of them. Thoroughly brushing out the inside of the nostrils with the glycerine of tannin will usually give relief, and does much towards removing the disagreeable smell. When the seat of the disease is apparently too far back for the brush to reach it, the glycerine of tannin may be poured into a wash-hand basin with a little water, and then snuffed up the nostrils. The condition to which we have referred is generally known as *ozæna*.

Glycerine of tannic acid forms a valuable application in *discharges from the ear*, a common complaint in weak, unhealthy children after long illnesses. A few drops should be poured into the ear, and retained there by a little cotton-wool. A single application often effects a cure, but should it not do so it must be repeated.

Glycerine of tannic acid is useful in *affections of the throat*. In many cases it acts like a charm. In a *relaxed sore throat* there is nothing better than swabbing out the throat with this substance. The patient should sit in a chair with his head slightly thrown back and his mouth wide open. The operator who is about

to perform the friendly office for him now dips the brush in the glycerine of tannin, and when it is thoroughly covered thrusts it into the open mouth, taking good care to go right to the back of the throat. The patient generally expectorates freely and forcibly, and it is a good plan to get behind him as soon as the application is finished. A basin or other utensil should be provided for the patient to spit into. If he does not at once express his relief it is because the astringency of the preparation prevents him from uttering the words of gratitude. The tannic acid gargle (Pr. 82) may in addition be used three or four times a day. *Enlargement of the tonsils* may often be treated with advantage in the same way.

Many long-standing *coughs* which are supposed to indicate that the sufferer is "going into a decline" are entirely dependent on a relaxed condition of the throat, and may be cured in a few days by the use of glycerine of tannic acid.

Deafness is often due to the throat, and when such is the case it often yields to this method of treatment.

Tannic acid lozenges are sometimes used in the cases in which we have recommended the application of the glycerine of tannin, but they are far less efficacious, and not so likely to afford relief.

Gallic acid given internally is a very valuable remedy for *bleeding from the lungs, stomach, womb, kidneys*, and in fact from any internal organ. It should be kept in powders, each containing fifteen grains, one of which may in any of these cases be at once dissolved in a little water and tossed off. When the glycerine of tannin only is at hand this may be employed mixed with water in two tea-spoonful doses. The medicine should be repeated at intervals of four hours. The astringent mixture (Pr. 29) contains gallic acid, and is useful in all these cases. In many cases of *Bright's disease* benefit may be obtained by the use of gallic acid in fifteen-grain doses every four hours. Two table-spoonfuls of the mixture contain this dose.

We have already had occasion to refer to the use of an ointment of galls and opium for the relief of *piles*. (See also HAZELINE.)

OPIUM AND MORPHINE.

We must now consider the characters and properties of that subtle and mighty drug opium, the gift of God to suffering humanity, the dread agent of unimaginable pleasure and pain.

It is obtained chiefly from the white poppy (*Papaver somniferum*), which is cultivated for the purpose in Egypt, Persia, Asia Minor, India, and other warm countries. It is probable that this, our common garden poppy, is a native of the East, which has become naturalised in the South of Europe. It is raised in large quantities at Mitcham, in Surrey, chiefly for the sake of the heads, and it grows wild on the sandy banks of the fen ditches in some parts of Norfolk and Cambridgeshire. It is a hardy annual, flowering in July, and varying somewhat in the form and colour of its rich, beautiful double petals.

The process of obtaining the drug consists essentially in making cuts into the unripe capsule, and collecting the juice which exudes. In Asia Minor they carry the incision in a line round the circumference, or in a spiral from apex to base, whilst in India it is customary to scarify the capsule from top to bottom. The white milky

juice is allowed to dry into tears, and is then scraped off and pressed together so as to form a homogeneous mass, after which it is dried in a warm, airy room. The opium manufacturers suffer no inconvenience from the nature of their employment, contact with crude opium and breathing air impregnated with the emanations from the drug apparently exerting no injurious influence on the system. During the operations of drying, packing, and examining opium immense quantities necessarily pass through the hands of those engaged in the process, but no complaints are made of any ill effects resulting from contact with the drug. The native opium examiners often sit for hours together in the midst of tons of opium, samples of which they are constantly manipulating and smelling, and yet they, as a rule, enjoy the most perfect health. This immunity contrasts strongly with the suffering of workers in lead and mercury, to which we have already alluded. These facts, however, are not to be regarded as an indication that opium used externally is under all circumstances inert. Thus laudanum applied to an ulcerated or abraded surface will produce poisonous



Fig. 15.—THE OPIUM POPPY.

effects—not so quickly, it is true, as when administered internally, but with equal certainty. A few years ago a child was accidentally killed by the application of opium and water to the surface of an extensive scald.

There are several varieties of opium, of which the most valuable and best known are the Smyrna, Constantinople, Egyptian, and Indian. In this country the poppy

has been occasionally cultivated for the purpose of obtaining opium, and specimens have been produced which were ascertained to be in no way inferior to the Oriental. Opium is a solid, compact substance, of a dark reddish-brown colour, opaque, soft and tenacious when fresh, but when long kept, hard and readily powdered. It has a strong, heavy, peculiar, and somewhat disagreeable smell, and a nauseous taste. It is inflammable, and burns with a bright flame. It is partly soluble in water, forming a solution of a dark brown colour. The Smyrna opium is imported in rounded or flattened masses, which are enveloped in leaves; whilst the Egyptian is made into cakes of about three inches in diameter. The Bengal opium is peculiar, it being sent over in hard, round balls, nearly as large as a child's head, and looking very much like a 24-pound shot. The smell of opium is so essentially *sui generis* that no difficulty is experienced in recognising the drug in whatever form it may occur.

Opium is not a simple substance, but consists of a number of principles, of which morphia is at once the most powerful, and, to us, the most familiar example. Opium, like most other expensive drugs, is not uncommonly adulterated, and frequently contains mechanical impurities, such as stones, sand, clay, bullets, and even cow-dung, all of which are readily detected by breaking up the mass in cold water, and allowing the heavy particles to subside. Other substances, such as sugar, treacle, and flour, are used for a similar purpose, but the fraud seldom succeeds with those who are practically acquainted with the colour, aroma, and texture of the drug. The value of any individual specimen depends chiefly on the percentage of morphia which it contains.

There are several forms in which opium may be given, and there are many preparations into the composition of which it enters. For external application we have the plaster and liniment, and an ointment of galls and opium, which is a favourite application for piles. Then we have an electuary or confection of opium, which is seldom used; and the opium lozenge. It is an essential constituent in the compound soap pill, of Dover's powder, and of the aromatic powder of chalk and opium. Laudanum is a tincture of opium; whilst a weaker preparation, combined with certain aromatic substances, is known as paregoric or paregoric elixir. The liquid extract of opium and opium wine are of nearly the same strength as the tincture, for they contain a grain of opium in about twenty-five drops. "Black drop," a strong preparation of opium, the exact composition of which was kept secret, has now almost entirely fallen out of use. *Apomorphine derived from morphine is a powerful emetic, and is never used as a narcotic.*

We must now consider the effects produced by the internal administration of opium. A small dose, such as half a grain of solid opium, or from ten to twelve drops of laudanum, usually acts as a stimulant to those who are not habituated to its use. The pulse soon becomes stronger and quicker, the mind is exhilarated, the ideas flow more rapidly, a pleasurable, or even luxurious, sensation is experienced, and for a time there is an increased capacity for bodily and mental exertion. These symptoms are followed by a diminution of muscular power, by drowsiness, a desire for repose, and a tendency to sleep. The mouth and tongue become dry, and hunger is diminished, though thirst is often increased. When a larger dose is

given the mind is apparently elevated to such an extent as to produce intoxication, or even delirium, and the various functions, both mental and corporeal, are invigorated. These effects, however, are of short duration, and are soon followed by languor and drowsiness; the sensibility to external impressions is impaired, so as to induce sleep, which is attended by dreams, sometimes pleasant, but frequently of a most painful character. In many instances this stage is accompanied by languor, nausea, vomiting, thirst, and headache. The stimulating operation of opium generally continues about an hour, but the sedative effects usually last from six to eight hours. It is now recognised that opium may be given so as to obtain from it stimulating and also depressing effects, and that the former are primary, and are obtained from it in a moderate dose, while the latter are secondary, and are produced only by a larger dose.

There is no form of poisoning so common as that by opium and its various preparations. In two years there were 196 people killed by the intentional or accidental administration of opium, and this, in all probability, forms but a small proportion of the actual number of cases, as recoveries where medical aid is at hand are by no means unfrequent. When a poisonous dose has been taken the primary stage of excitement is of very brief duration, and great giddiness, with an irresistible craving for sleep, soon supervene. The sleep rapidly passes into profound insensibility, from which the patient can be roused only with the greatest difficulty, and even then he almost immediately relapses into a state of stupor. The face is usually pale, whilst the pulse, which was at first strong, becomes so weak that it can hardly be distinguished. If the pupils of the eyes be examined, by raising the upper eyelids, they will be found very small, a condition which is characteristic of opium poisoning. The power of swallowing is gradually lost, so that phlegm and saliva collect in the throat, and after a time breathing ceases.

Sometimes it is not easy to tell whether a person who is found insensible has taken opium or has had a fit. When the case is one of poisoning, the bottle, labelled laudanum, or smelling of that substance, will usually be found in the pocket or close at hand, whilst the account given by the friends, or the circumstances under which the occurrence took place, will aid one in arriving at a correct conclusion. The odour of opium is frequently detected in the breath or vomited matters, but when the drug has been taken in beer this may not be perceptible.

The condition of the eyes is also a guide, for in opium poisoning the pupils are very small, whilst in an apoplectic fit they are usually large and frequently unequal in size.

What to do in Poisoning by Laudanum, Opium, or Morphine.—1. Send for the doctor. 2. Make the patient sick. The emetic draught (Pr. 27), a teaspoonful of sulphate of zinc, dissolved in hot water, and given a half at a time, or large draughts of hot water, hot mustard-and-water, or salt-and-water, will have the desired effect. 3. Rouse the patient by every means in your power, keep him constantly walking about, shout at him, pinch him, strike him, stick pins into him, but do not let him go to sleep. 4. If he can swallow, give him hot strong coffee. 5. Dash cold water suddenly into his face. Should he become perfectly insensible,

you must have recourse to the cold douche. Get a large can of cold water, stand upon the table, and pour it forcibly over his head and face; take care that it does not get into his mouth, as he may be too feeble to expel it, and you may choke him. For details see Murrell's "What to do in Cases of Poisoning."

These measures may, at first sight, appear to be rather energetic, but a desperate disease requires disagreeable treatment. The unfortunate victim has an irresistible desire to sleep, and it would be a cruel kindness to let him have his own way in the matter. The endeavours to keep him awake may have to be continued without a minute's intermission for hours and hours, and it may be necessary to send to the station for three or four policemen to relieve one another in the very tiring process of keeping the patient constantly on his legs. Even when he has been restored to consciousness, and is apparently perfectly sensible, he must be carefully watched, for at any moment he may have a relapse, and become once more comatose. It is not advisable in cases of opium poisoning to administer wine or brandy.

The influence of habit in diminishing the powers of opium on the system are very remarkable. In Turkey and other Eastern nations, where the use of wine is prohibited by the established religion, it is consumed in immense quantities. It is taken with rich syrups and the juice of fruits, to make it more palatable, or it is made up into small lozenges with spices, and stamped with the words *Masch Allah*, "the gift of God."

Much of our knowledge of the effects of opium on the system is derived from the confessions of De Quincey, the English opium-eater. It will be remembered that he commenced the practice of taking opium at the recommendation of a college acquaintance for the relief of an excruciating pain in the head and face from which he had suffered for some weeks. The graphic description of his initiation into the mysteries of the drug we cannot refrain from quoting:—"I was necessarily ignorant," he says, "of the whole art and mystery of opium-taking; and what I took I took under every disadvantage. But I took it; and in an hour—oh, heavens! what a revulsion! what an upheaving, from its lowest depths, of the inner spirit! what an apocalypse of the world within me! That my pains had vanished was now a trifle in my eyes; this negative effect was swallowed up in the immensity of those positive effects which had opened before me, in the abyss of divine enjoyment thus suddenly revealed. Here was a panacea, a *Φάρμακον νηπενθές*, for all human woes; here was the secret of happiness, about which philosophers had disputed for so many ages, at once discovered; happiness might now be bought for a penny, and carried in the waistcoat pocket; portable ecstasies might be had corked up in a pint bottle, and peace of mind could be sent in gallons by the mail-coach." Opium, moreover, possesses a wonderful power of sustaining the strength and of enabling men to undergo fatigue and continued exertion under which they would otherwise inevitably sink. The Tartar couriers who travel for many days and nights use it constantly, and with a few dates or a lump of coarse bread they traverse the trackless desert amidst privations and hardships which could be supported only under the influence of the drug. Even the horses are sustained by its influence, the traveller often sharing his store of opium with his flagging steed. It is often supposed that the excitement produced by opium is similar to that

resulting from indulgence in alcoholic liquors. Such, however, is not the case. De Quincey is so explicit upon this point that we need offer no apology for quoting his remarks on the subject :—

“Opium, I affirm peremptorily, is incapable of producing any state of body at all resembling that which is produced by alcohol, and not in *degree* only incapable, but even in *kind* ; it is not in the quantity of its effects merely, but in the quality, that it differs altogether. The pleasure given by wine is always mounting and tending to a crisis, after which it declines ; that from opium when once generated is stationary for eight or ten hours : the first, to borrow a technical distinction from medicine, is a case of acute, the second of chronic pleasure ; the one is a flame, the other a steady and equable glow. But the main distinction lies in this, that whereas wine disorders the mental faculties, opium, on the contrary (if taken in a proper manner), introduces among them exquisite order, legislation, and harmony. Wine robs a man of his self-possession, opium greatly invigorates it. Wine unsettles and clouds the judgment, and gives a preternatural brightness, and a vivid exaltation, to the contempts and the admirations, to the loves and the hatreds of the drinker ; opium, on the contrary, communicates serenity and equipoise to all the faculties active and passive, and with respect to the temper and moral feelings in general, it gives simply that sort of vital warmth which is approved by the judgment, and which would probably always accompany a bodily constitution of primeval or antediluvian health. Thus, for instance, opium, like wine, gives an expansion to the heart and the benevolent affections, but then with this remarkable difference, that in the sudden development of kind-heartedness which accompanies inebriation, there is always more or less of a maudlin character which exposes it to the contempt of the bystander. Men shake hands, swear eternal friendship, and shed tears, no mortal knows why, and the sensual creature is clearly uppermost. But the expansion of the benigner feelings incident to opium is no febrile access, but a healthy restoration to that which the mind would naturally recover upon the removal of any deep-seated irritation of pain that has disturbed and quarrelled with the impulses of a heart originally just and good.” Our author subsequently says :—“Wine constantly leads a man to the brink of absurdity and extravagance, and beyond a certain point it is sure to volatilise and to disperse the intellectual energies, whereas opium always seems to compose what had been agitated, and to concentrate what had been distracted. In short, to sum up in one word, a man who is inebriated, or tending to inebriation, is, and feels that he is, in a condition which calls up into supremacy the merely human, too often the brutal, part of his nature ; but the opium-eater (I speak of him who is not suffering from disease or other remote effects of opium) feels that the diviner part of his nature is paramount—that is, the moral affections are in a state of cloudless serenity, and over all is the great light of the majestic intellect.”

If we contrast the furious madman, the subject of delirium tremens, with the prostrate debauchee, the victim of opium, or the violent drunkard with the dreamy sensualist, intoxicated with his favourite drug, it must be admitted that the comparison is not in favour of the former. The opium-eater is, at least, harmless to every one except himself, whilst the drunkard is not only a dangerous nuisance, but an enemy to the community at large.

It is usually stated that the elevation of spirits produced by opium is necessarily followed by a proportionate depression, and that the natural and even immediate consequence of opium is stagnation both of body and mind. This is positively denied by De Quincey, who affirms that for the ten years during which he took opium at intervals and in moderation, the day succeeding that on which he had recourse to the drug was always one of unusually good spirits. He states, too, that the primary exciting and stimulating effects always lasted with him during his noviciate for upwards of eight hours, and he was thus enabled to time the exhibition of his dose, so that its narcotic influence corresponded with the natural hours of rest. In his earlier experiences, when he resorted to the use of opium not oftener than once in three weeks, it never induced a desire for silence or solitude, for he owns that he frequently indulged in a debauch preparatory to a visit to the opera. This statement, however, is subsequently somewhat modified when he says:—"Yet in candour I will admit that markets and theatres are not the appropriate haunts of the opium-eater when in the divinest state incident to his enjoyment. In that state crowds become an oppression to him; music even too sensual and gross. He naturally seeks solitude and silence, as indispensable conditions of those trances or profoundest reveries which are the crown and consummation of what opium can do for human nature. . . . The remedies I sought were to force myself into society, and to keep my understanding in continual activity on matters of science. But for these remedies, I should certainly have become hypochondriacally melancholy. In after-years, however, when my cheerfulness was more fully re-established, I yielded to my natural inclination for a solitary life. And at that time I often fell into those reveries upon taking opium, and more than once it has happened to me when I have been at an open window, in a room from which I could overlook the sea at a mile below me, and could command a view of the great town of L——, at about the same distance, that I have sat from sunrise to sunset motionless, and without wishing to move."

By degrees, as the habit of opium-eating becomes more and more confirmed, the drug loses its stimulating effects on the system, and the beatific intoxication so eagerly yearned for by its devotees is no longer produced. The dose is gradually increased, but even this, the last resource of the unfortunate victim of a baneful habit, in time proves unavailing, and an indescribable agony, both mental and corporeal, is the penalty paid for former indulgence. This is accompanied by a state of incapacity and feebleness, and of intellectual torpor in which the most ordinary mental exertion is performed with the greatest difficulty. De Quincey, speaking of his condition during the four years that he was under the Circean spells of opium, says:—"But for misery and suffering, I might indeed be said to have existed in a dormant state. I seldom could prevail on myself to write a letter—an answer of a few words to any that I received was the utmost that I could accomplish; and often *that* not until the letter had lain weeks, or even months, on my writing-table. Without extraneous aid, all records of bills paid or to be paid must have perished, and my whole domestic economy must have gone into irretrievable confusion." We are told in the biographies of Coleridge, another great opium-eater, that a prominent feature of his character was procrastination, and that he was strikingly deficient in

that steady persevering determination which is alone the precursor of success, and the parent of all great actions. It is to this condition that De Quincey refers when he says :—"The opium-eater loses none of his moral sensibilities or aspirations ; he wishes and longs as earnestly as ever to realise what he believes possible, and feels to be exacted by duty ; but his intellectual apprehension of what is possible infinitely outruns his power, not of execution only, but even of power to attempt. He lies under the weight of incubus and night-mare ; he lies in sight of all that he would fain perform, just as a man forcibly confined to his bed by the mortal languor of a relaxing disease, who is compelled to witness injury or outrage offered to some object of his tenderest love ; he curses the spells which chain him down from motion, and he would lay down his life if he might but get up and walk ; but he is powerless as an infant, and cannot even attempt to rise."

The dreams, both waking and sleeping, which emanate from habitual indulgence in opium are of a maddening, frenzied character, and are to the unfortunate sufferer simply overwhelming in the reality of their unreality. De Quincey says :—"I was stared at, hooted at, grinned at, chattered at by monkeys, parroquets, by cockatoos. I ran into pagodas, and was fixed for centuries at the summit, or in secret rooms : I was the idol ; I was the priest ; I was worshipped ; I was sacrificed. I fled from the wrath of Brama through all the forests of Asia ; Vishnu hated me ; Siva laid wait for me. I came suddenly upon Isis and Osiris ; I had done a deed, they said, which the ibis and crocodile trembled at. I was buried for a thousand years in stone coffins with mummies and sphinxes, in narrow chambers at the heart of eternal pyramids. I was kissed with cancerous kisses by crocodiles, and laid confounded with all unutterable slimy things amongst reeds and Nilotic mud."

Let us turn now for a moment to the consideration of a question which is frequently asked, but is by no means easily answered. Is opium-eating common in this country ? We believe that in some parts of England the custom is extremely prevalent, but this opinion, as may be imagined, rests solely on circumstantial evidence. It is well known that the quantity of opium imported into this country is much greater than is needed for strictly legitimate medical purposes. Many chemists have regular customers who come for their opium with as much regularity, and quite as much as a matter of course, as other people go to the public-house for their beer. It is not, it is true, usually drunk on the premises, but there are exceptions even to this rule, and people are known who would toss off their glass of laudanum with as much gusto as we dispose of our glass of bitter. The proceedings of the law courts occasionally disclose the fact that whole families have for years been opium-eaters without the circumstances attracting any attention on the part of their friends and neighbours. Students of biography know that some of our most eminent modern poets and philosophers have derived inspiration from this mighty drug. Medical men are often, in the course of their professional avocations, brought in contact with people who for years have constantly taken opium, and such cases are by no means uncommon amongst the inmates of our hospitals and workhouses. It is to be feared that opium-eating pervades all classes of society, from De Quincey to John Jasper, from Coleridge to Miss Gwilt. Is there any mark by which an opium-eater can be recognised ? We believe not ;

although it is said by some writers that an opium eater can be instantly recognised by his appearance. We are told that a total attenuation of the body, a withered yellow countenance, a lame gait, a bending of the spine, and glossy, deep sunken eyes, betray him at the first glance. These symptoms may perhaps be observed in those who are habituated to the use of inordinate quantities of opium, but they are certainly not characteristic of those who take the drug occasionally and in moderation. The opium-eaters whom we have seen have been in appearance very much like ordinary mortals, and it may be fairly assumed that it is only when the drug is used in large quantities that it sets its distinctive mark on the victim. The habitual drunkard is at once recognised, even the little boys in the street indicating the facility with which the diagnosis is made, but there is nothing characteristic of a teetotaller, nothing by which we can distinguish him from his fellow-creatures who take their glass of bitter or pint of claret at lunch or dinner every day of their lives. And so it is with the opium-eater, if he can only keep his vice within bounds he runs very little risk of detection.

Is opium-eating injurious to the system? When taken strictly in moderation we believe that it is not to any appreciable extent. It has been too much the practice of writers on the subject to content themselves with drawing the sad picture of the confirmed opium debauchee, plunged in the lowest depths of moral and physical exhaustion, and having formed the premises of their argument from this exception, to proceed at once to involve the whole practice in one sweeping condemnation. It would be almost as rational to paint the horrors of delirium tremens, and upon that evidence to condemn at once the entire use of alcoholic liquors. The question now under consideration is not what are the effects of opium used to excess, but what are its effects, mental and physical, when taken in moderation, either as a stimulant during excessive fatigue, or a restorative and sedative after bodily or mental labour. We have the evidence of De Quincey that from 1804 to 1812, a period of eight years, during which he was a dilettante eater of opium, he enjoyed perfect health, and was, in fact, never better in his life. It was only later, when he took the drug constantly and in large quantities, that his health suffered. It is well known that the Chinese are a nation of opium-eaters, and yet they are a muscular and well-formed race, the labouring classes being capable of great and prolonged exertion under a fierce sun and in an unhealthy climate. Their disposition is cheerful and peaceable, and in general intelligence they rank deservedly high among Orientals. In China and the islands of the Indian Archipelago, immense quantities of opium are consumed by smoking. The smokable extract called *chandoo* is made into pills about the size of a pea. One of these is placed in a small tube and lighted at a lamp, the smoke being retained in the mouth as long as possible, and then expelled through the nostrils. It does not appear that the practice, when pursued in moderation, is detrimental to health. Many people have attained the age of sixty or seventy who have been well known as habitual opium-smokers for thirty years or more. As 'Er Royal 'Ighness the Princess Hopium Puffer says in "Edwin Drood," "It's opium, deary, and it's like a human creeter so far, that you always hear what can be said against it, but seldom what can be said in its praise." In spite of this evidence, however,

it should be distinctly understood that we do not advocate the use of opium, and have no hesitation in saying that no one has a right knowingly to enroll himself in the category of opium-eaters. Our advice to those who may be tempted to commence the practice is most emphatically, "Don't."

When the baneful habit of opium-eating has been confirmed, it is with extreme difficulty that it is shaken off. The agony of the opium-eater when deprived of his drug is as horrible as his happiness is complete when he has taken his accustomed stimulant. On the one hand, he suffers the torments of hell; on the other, the bliss of paradise. Some idea of the powerful influence which opium exerts on its victims, and of the difficulty of casting off its yoke, may be formed from the following extract from a letter written by Coleridge to his friend and biographer Cottle:—

"For ten years the anguish of my spirit has been indescribable, the sense of my danger staring, but the consciousness of my guilt worse, far worse, than all! I have prayed with drops of agony on my brow; trembling, not only before the justice of my Maker, but even before the mercy of my Redeemer. I gave thee so many talents—what hast thou done with them?

"Overwhelmed as I am with a sense of my direful calamity, I have never attempted to disguise or conceal the cause. On the contrary, not only to friends have I stated the whole case, with tears, and the very bitterness of shame, but in two instances I have warned young men, mere acquaintances, who have spoken of having taken laudanum, of the dire consequences, by an awful exposition of its tremendous effects on myself. Though before God, I cannot lift up my eyes, and only do not despair of His mercy because to despair would be adding crime to crime, yet to my fellow-men I may say that I was seduced into the accursed habit ignorantly. I had been almost bed-ridden for many months, with swellings in my knees; in a medical journal I, unhappily, met with an account of a cure performed in a similar case (or what appeared to me to be so), by rubbing in of laudanum, at the same time taking a given dose internally. It acted like a charm, like a miracle! I recovered the use of my limbs, of my appetite, of my spirits, and this continued for near a fortnight. At length, the unusual stimulus subsided, the complaint returned, the supposed remedy was recurred to—but I cannot go on through the dreary history. Suffice it to say that effects were produced which acted on me by terror, cowardice, fear of pain and sudden death, not (so help me God!) by any temptation of pleasure or expectation, or desire of exciting pleasurable sensations. On the very contrary; Mrs. Morgan and her sister will bear witness so far as to say that the longer I abstained, the higher my spirits were, the keener my enjoyments—till the moment, the direful moment, arrived, when my pulse began to fluctuate, my heart to palpitate, and such a dreadful falling abroad, as it were, of my whole frame, such intolerable restlessness and incipient bewilderment, that in the last of my several attempts to abandon the dire poison, I exclaimed in agony, which I now repeat in seriousness and solemnity, 'I am too poor to hazard this.'

"Had I but a few hundred pounds (but £200), half to send to Mrs. Coleridge, and half to place myself in a private mad-house, where I could procure nothing but what a physician thought proper, and where a medical attendant could be constantly

with me for two or three months (in less than that time life or death would be determined), then there might be hope. Now there is none! O God, how willingly would I place myself under Dr. Fox, in his establishment! for my case is a species of madness, only that it is a derangement, an utter impotence of the volition and not of the intellectual faculties. You bid me rouse myself! Go, bid a man paralytic in both arms to rub them briskly together, and that will cure him. 'Alas!' he would reply, 'that I cannot move my arms is my complaint, and my misery.' "

Coleridge, we are told, was at this time in a pitiable condition. His passion for opium had so completely subdued his will that he seemed carried away without resistance by an overwhelming force. The impression was fixed on his mind that he would inevitably die unless placed under constraint, and that constraint he felt could be alone afforded in an asylum.

That emancipation from the spells of opium may be obtained is shown by the case of De Quincey, who, after a seventeen years' use, and an eight years' abuse of the drug, finally succeeded in renouncing its powers. The struggle must of necessity be severe, but by steady perseverance success may be assuredly attained. De Quincey's description of his efforts to renounce the use of his old friend and enemy illustrates the difficulties which beset the path of those who determine to shake off the influence of the pernicious and enervating habit.

"Opium," he says, "I resolved wholly to abjure, as soon as I should find myself at liberty to bend my undivided attention and energy to this purpose. It was not, however, until the 24th of June last that any tolerable concurrence of facilities for such an attempt arrived. On that day I began my experiment, having previously settled in my own mind that I would not flinch, but would 'stand up to the scratch' under any possible 'punishment.' I must premise that about one hundred and seventy or one hundred and eighty drops had been my ordinary allowance for many months. Occasionally I had run up as high as five hundred, and once nearly to seven hundred. In repeated preludes to my final experiment, I had also gone as low as one hundred drops, but had found it impossible to stand it beyond the fourth day, which, by the way, I have always found more difficult to get over than any of the preceding three. I went off under easy sail—one hundred and thirty drops a day for three days; on the fourth I plunged at once to eighty. The misery which I now suffered 'took the conceit' out of me at once, and for about a month I continued off and on about this mark; then I sank to sixty, and the next day to none at all. This was the first day for nearly ten years that I had existed without opium. I persevered in my abstinence for ninety hours, that is, upwards of half a week. Then I took—ask me not how much; say, ye severest, what would you have done? Then I abstained again, then took about twenty-five drops, then abstained, and so on."

What are you to do if you are a confirmed opium-eater? If you have been for years in the habit of taking opium in small quantities, and if you find that not only has your health not suffered, but that your powers, both mental and bodily, have improved, by all means let well alone, taking especial care, however, not to increase the quantity or the frequency of the dose. This, we confess, is a hypothetical

case; practically they never occur, and the circumstances which would justify you in continuing the habit of opium-eating are exceptional in the extreme. If, on the contrary, your health *has* suffered, if you feel, or if your friends notice, that you cannot work as you used to, and that you are not the man you were, you must lose no time in abandoning at once and for ever the use of the drug. Go to a medical man and tell him without reservation the circumstances of your case, and trust yourself implicitly in his hands. If you feel that you have not the power or energy to deny yourself your accustomed stimulus, and if you are in sufficiently good circumstances, do not hesitate to have a medical attendant with you constantly, to watch you day and night, and guard you from yourself and your enemy, until you have attained sufficient strength of mind to take the task in your own hands. If you are not in a position to do this, place yourself under conditions in which it will be impossible for you, under any pretence whatever, to obtain access to your favourite drug. Go to a hydropathic establishment, or to some institution conducted upon a similar principle, where you can obtain nothing but what is allowed you by the physician and the rules of the place. If you like, go on a long walking tour with a strong-minded friend who is acquainted with your infirmities. Give him your purse, lest you should be tempted, and let him cater for you. You may, if you like and can, take a sea voyage, although the absence of active employment and the monotony of the life are less favourable conditions for conquering your habit. If you find it impossible to get away from your work, still do not trust to your unassisted efforts, but confide in a clear-headed friend, in your wife, or in any one in whom you can place implicit confidence, and who will take an active and intelligent interest in your case. Do not try and cure yourself little by little by gradually reducing the dose, but take the right step and break through your bonds at one bold sweep, and never, under any circumstances, touch another drop of opium. The struggle will be a severe one, but it will not kill you. You will have a rough time of it just at first, but you must stand up and bear it like a man. If you were going to have a tooth out, would you rather have it out fang by fang, or tell the dentist to give a long pull and a strong pull, and have done with it? It is painful, but you must grin and bear it. You may break your fall, if you like, by smoking in moderation, or by taking tonics. Try the gentian and soda mixture (Pr. 14), and follow this up by a course of quinine (Pr. 9) or iron (Pr. 1). Take plenty of exercise, go in for long walks and thoroughly tire yourself out, so that when you go to bed you will fall asleep and sleep the sleep of the innocent. Put your shoulder to the wheel, make up your mind to win, and in a month you will be another man.

Even on grounds of economy alone it may be desirable to discontinue the habit. Opium is by no means an inexpensive drug, and the man who smokes eighteenpenny cigars would probably consider himself perfectly justified in complaining of the absurd and unwarrantable extravagance of the habitual opium-eater. It must be remembered that, in the words of Dickens's "Hopium Puffer," "the market price is drest high just now."

It may appear almost superfluous to state that opium is one of the most valuable drugs in our *materia medica*. At the same time, it is not a drug which is to be used lightly and without due consideration. It will relieve *almost all kinds of pain*, but

the mere fact of your having a pain is not to be considered as a justification for using opium. It is not to be used for little pains; you must wait till your pain is very bad indeed—in fact, almost agonising—before you begin even to think of opium. A man who would use opium for every little trivial ache and pain would take an 80-ton gun to go rabbit shooting. You must remember that opium is your sheet-anchor, and you must reserve it for your very bad pains.

In the first place, What will opium do for us when applied externally? A mixture of equal parts of opodeldoc and laudanum, when rubbed in over the painful spot, will usually quickly relieve *neuralgia*, *lumbago*, *sciatica*, and similar complaints. The same application often relieves the *pain in the side* resulting from pleurisy, inflammation of the lungs, and other diseases.

Laudanum rubbed into the gums, or applied on a little cotton-wool to a hollow tooth, will often cure *toothache*. If a drop or two should be accidentally swallowed, it is of very little consequence, as the ordinary dose for an adult is from fifteen to twenty drops.

The ointment of galls and opium is a favourite application for *piles*, and in mild cases will usually effect a cure. It is made by mixing eighty grains of finely-powdered galls and twenty-six grains of powdered opium with an ounce of lard.

Opium is given internally for the relief of pain and spasm of all kinds. Thus it is useful in *cancer and ulcer of the stomach*, and in inflammation of that organ occurring in those who habitually indulge too freely in stimulants. It will give relief in all forms of *colic*, even when dependent on the passage of a calculus or gall-stone. Laudanum is nearly always at hand, or is readily procurable, and a dose of from twenty to twenty-five drops in a glass of water will, in the case of an adult, usually relieve pain, from whatever cause arising. It is often advantageous to add fifteen drops of chloric ether to the mixture, but it is not essential.

In nearly all forms of *diarrhœa*, the administration of opium proves beneficial. It is useful not only in the ordinary summer diarrhœa, but in those severer forms which accompany the progress of typhoid fever, dysentery, and other organic diseases. It may be administered alone, as laudanum, or preferably in combination with some astringent, as we have it in the diarrhœa mixture (Pr. 28). On the other hand, drop or half-drop doses of laudanum, given hourly or oftener, will prove beneficial in an obstinately confined state of the bowels. In all cases of obstruction of the bowels, when ordinary purgatives have failed to produce an evacuation, it is desirable to resort to the use of opium.

In some forms of *cough*, opium, or its alkaloid morphine, may be given with great advantage. Its use is indicated in nasty little “hacketing” coughs, and when the cough is violent and frequent, but unaccompanied by expectoration. Opium should not be given when there is much expectoration, for it may cause profound sleep, during which the phlegm, not being coughed up, will accumulate in the chest, and may cause suffocation.

The following is a very useful formula for allaying cough:—

Morphia Linctus—Solution of morphine, 80 minims; chloric ether, 90 minims; syrup of lemons, four ounces by measure. These are to be well mixed together, and a tea-spoonful is to be taken occasionally when the cough is troublesome. When it

has to be made on a large scale, and expense is an object, treacle-and-water, or honey-and-water, may be substituted for the syrup of lemons, without in any way detracting from its efficacy. It is as well to retain the dose for as long a time as possible in the mouth, and to swallow it slowly, as by its viscidness it proves very soothing to the throat when inflamed or ulcerated. The opium and morphine lozenges of the Pharmacopœia, and the lozenge pills (Pr. 69), are used for a similar purpose, but the linctus will often succeed when they have failed.

It is well known that a small dose of opium taken at bed-time will, if resorted to at the commencement of the attack, frequently cut short a cold in the head. Ten grains of Dover's powder may be taken for this purpose, or, better still, ten or fifteen drops of laudanum in a good stiff glass of grog.

Opium frequently produces sleep when everything else has failed, a matter of no little importance, for in fevers *sleeplessness*, by quickly wearing out the strength, is one of the most dangerous symptoms. Laudanum may be given with signal benefit in the *muttering delirium* occurring in the course of many severe illnesses.

Now-a-days the hypodermic or subcutaneous injection of morphine plays a prominent part in the relief of pain and the treatment of disease. The drug by being introduced under the skin is more quickly absorbed than when taken in the ordinary way, and there is less likelihood of its upsetting the stomach or disagreeing with the digestive organs. It is an operation which, though perfectly simple and easy, should be resorted to only under the immediate personal advice and superintendence of a medical man.

There are certain circumstances under which opium should not be used. It is not safe to give it in Bright's disease, or when the patient is known or suspected to be suffering from disease of the kidneys. It should not be given in bad cases of bronchitis, especially if there is much difficulty in breathing, or any blueness about the face or lips. It should not be given in brain disease, as in most cases injury would result from its employment. And, above all, it should not be given to children. There are exceptions to these rules, but they are not many, and they should be departed from only under professional guidance. It is very important not to give opium to children. It is to be feared that the practice of dosing the poor unfortunate innocent with "teething powders" and "soothing syrups" is greatly on the increase, and a more pernicious or dangerous custom it is difficult to conceive. Opium is poisonous to children, a single drop of laudanum being sufficient to kill an infant. It should be distinctly understood that all the most extensively advertised "cordials," "carminatives," and "soothing syrups" contain opium in some form or other, in spite of the assertions of their proprietors to the contrary.

Chlorodyne is a popular remedy for many diseases, and is undoubtedly a valuable composition. It is said to be made as follows:—Chloroform, 4 oz. ; ether, 1 oz. ; rectified spirit, 4 oz. ; treacle, 4 oz. ; extract of liquorice, $2\frac{1}{2}$ oz. ; muriate of morphia, 8 grs. ; oil of peppermint, 16 minims ; syrup, $17\frac{1}{2}$ oz. ; prussic acid (2 per cent.) 2 oz. Dissolve the muriate of morphia and the oil of peppermint in the rectified spirit, mix the chloroform and ether with this solution ; dissolve the extract of liquorice in the syrup, and add the treacle ; shake these two solutions together, and add the prussic acid. The dose for an adult is ten drops in

a little water. It is now introduced into the Pharmacopœia under the name of "Tincture of Chloroform and Morphine."

Nepenthe is a strong preparation of morphine, and is given to procure sleep.

PANCREATIC EMULSION.

Pancreatic emulsion is prepared from the pancreas or sweetbread of pigs and other animals. It is largely used in the treatment of *consumption* and other wasting diseases, and also in *general debility*. The dose is a tea-spoonful or more in a tumblerful of milk with a table-spoonful of brandy twice a day, about two hours after meals. It should be well mixed with the milk, so as to get rid of the lumps. Most people take it without difficulty and gain flesh on it. It may be given with advantage when cod-liver oil cannot be taken. The Kepler Extract of Malt is also a useful alternative in these cases.

PHOSPHORUS—PHOSPHATE OF LIME—HYPOPHOSPHITE OF LIME.

Phosphorus was discovered about the middle of the seventeenth century, but was little used as a curative agent until some four or five years ago, when its success in the treatment of neuralgia and general nervous debility ensured for it an amount of attention and consideration it had not previously received. It is usually made by acting on bone ashes with oil of vitriol, and distilling the product with charcoal.

The prolonged inhalation of the fumes of phosphorus frequently gives rise to disease of the lower jaw. This complaint was at one time very prevalent amongst those employed in lucifer match manufactories, the "dippers," or people who immerse the slips of wood in the inflammable substance, being the chief sufferers. The disease, which was known as the "lucifer match disease," usually commences with loss of appetite, and a general feeling of weakness and inaptitude for muscular exercise. This is followed by toothache, then by the loss of the teeth, more especially the grinders, and finally, by disease or even death of a portion of the jaw. These cases are far less common than formerly, and are, in fact, now rarely met with. Careful attention to good ventilation in the workshops, and more particularly to personal cleanliness on the part of the operatives, have done much to stamp out the disease, and the introduction of red or non-fuming phosphorus in the matches will, we trust, ere long deal it its death-blow.

Phosphorus may be administered in solution, either in ether or olive oil, but it is much less objectionable if taken in the form of a pill. These pills are, from the inflammable nature of their chief ingredient, quite unsuited for home preparation, but they are readily made by or procured through the agency of any chemist. Each pill should contain one-thirtieth of a grain of pure phosphorus. The dose being so small, there is no occasion to make it into a bolus; a very little baby pill, not more than a quarter the size of the ordinary pills, will answer all practical purposes, and being so small, no difficulty will be experienced in taking it. An even still better and more elegant method is to take the phosphorus dissolved in almond oil, and

enclosed in capsules (Pr. 54). These capsules are largely used on the Continent, and form a very agreeable and pleasant mode of taking nauseous drugs. It is a great advantage to be able to take one's medicine in a palatable form—it robs many of our ailments of half their horrors.

Let us now consider in what cases we may advantageously use our capsules or pills. First and foremost, in that horrible complaint, *neuralgia*, the value of phosphorus has been so recently recognised that it is as yet impossible to point out with absolute certainty the indications for its employment, and to say exactly when it will succeed, and when only temporary benefit will be derived from its use. There is no doubt that the large majority of people afflicted with this disease derive considerable benefit from the use of phosphorus, and many even regard it as an absolute and positive specific. We would strongly urge sufferers who have been unsuccessful with other drugs to give this a patient trial, and we can assure them that there is every likelihood of success attending their efforts. One pill or capsule should be taken every three or four hours.

Phosphorus is given in a variety of diseases of nervous origin. It often proves of great value in *nervous prostration*, and has been used with success in *angina pectoris*, a disease allied to neuralgia.

We must now pass on to the consideration of two compounds of phosphorus with lime, both of which are valuable therapeutical agents.

Phosphate of lime is prepared for medicinal purposes by precipitating a solution of bone ash in spirits of salts by means of hartshorn. It is a white, tasteless, odourless powder, quite insoluble in water. It enters largely into the formation of the bones of the body, helping to build up their structure. It is of great use in *young people who are outgrowing their strength*, and in pale, weakly women who have been pulled down by the cares of a large family, and perhaps by *over-suckling*. People whose health is broken from prolonged town life, or over-work, or who from other causes are languid, hipped, and incapable of much exertion, are frequently benefited by this medicine, particularly if it be combined with some preparation of iron.

The phosphate of lime and iron powders (Pr. 77) will be found very useful. They often prove of great benefit in rickets.

Hypophosphite of lime is a white pearly-looking powder made by boiling phosphorus with milk of lime. A few grains placed on the end of a knife will burn almost as readily, and with as bright a flame, as phosphorus itself.

The value of the hypophosphite of lime in the treatment of *consumption* is a subject concerning which considerable diversity of opinion exists amongst medical men. That this method of treatment is often attended with the happiest results no doubt can be entertained. Under its influence the cough is lessened, the expectoration is eased, the night sweats become less profuse, and the patient rapidly increases, both in strength and weight. The hypophosphite may be conveniently taken in the form of the hypophosphite of lime mixture (Pr. 55). The dose is a tea-spoonful, gradually increased to a table-spoonful, three times a day. Fellow's "Syrup of the Hypophosphites" is most useful as a remedy for *incipient consumption*, *general debility*, and *nervous prostration*.

PODOPHYLLUM.

The *Podophyllum peltatum*, mandrake, may apple, or hog apple, is a plant which grows abundantly in the United States, chiefly in moist woods and shady situations, and along the banks of rivulets. The stem is usually from eight to ten inches high, and the plant bears a fruit which is known as "wild lemons," and is occasionally eaten. The portion used in medicine is the root, from which is obtained a resin known as podophyllin. This resin is a pale greenish-brown amorphous powder which readily dissolves in spirit. It is a purgative, and is so highly esteemed in its own country that it is known as American mercury or American calomel. It is best administered in the form of the solution (Pr. 51), the dose being two or three drops on sugar every three hours. This solution is useful in the *constipation of children*. Infants a few months old, especially after a previous attack of diarrhœa, frequently suffer from a confined state of the bowels, the motions being of a clay colour mottled with green, and often so hard that they crumble to pieces. This condition is accompanied by colic and distension of the belly with wind. The child is naturally fretful, and often cries, especially on going to stool. One or two drops on sugar twice or three times a day will quickly restore the motions to their natural colour, and remove the flatulent distension, so that a marked improvement is soon noticeable in the child's health. The medicine should be administered with sufficient frequency to relieve the bowels once or twice daily.

Falling of the bowel in children, with which the above condition is frequently associated, may be treated in the same way. In adults podophyllin proves of service in many forms of *chronic diarrhœa*. Its use is indicated when the motions are dark in colour, and when their passage is attended with sharp cutting pains, and more especially when the diarrhœa occurs only in the early morning before breakfast. Almost all forms of morning diarrhœa are curable by this medicine, even when of long standing. One or two drops of the solution three or four times a day will usually answer the purpose.

In some forms of *sick-headache* podophyllin is very useful. It should always be given when the attacks are preceded, accompanied, or followed by diarrhœa with dark-coloured motions. Sometimes, although the motions are dark in colour, the bowels are confined, and even then the podophyllin will do good. One or two drops should be given three or four times a day, and relief will usually be obtained.

In *bilious attacks*, when there are nausea and giddiness, a bitter taste in the mouth, vomiting of bile, and purging, accompanied by high-coloured urine, we give podophyllin. When instead of these symptoms there are pale and costive motions, dull pain over the liver, loss of appetite, and depression of spirits, it will do no good.

The unpleasant cankerous taste in the mouth known as "coppers," from which many people suffer the first thing in the morning, is, when not due to alcoholic excesses, usually amenable to podophyllin.

PRUSSIC ACID, OR HYDROCYANIC ACID.

A powerful poison? Quite so, and also a valuable remedy. It is an acid, but is never used for its acid properties. Its action is totally different, and is, in fact, *sui generis*.

Its name is derived from the fact of its having been first obtained from Prussian blue. It is contained in small quantities in the leaves and seeds of some of our commonest fruits, especially in apple-pips.

It is totally unfit for home preparation, and we have consequently no intention of describing the different modes in which it is procured. It is a colourless liquid having a peculiar characteristic odour. For medicinal purposes an extremely dilute solution (two per cent.) is employed. The dose of this is from one to five drops. A tea-spoonful, and probably half that quantity, would prove immediately fatal. The greatest care must of course be taken in dealing with it, and it should never be dispensed except by a person fully alive to the necessity for caution in the measurement of the dose.

In painful *diseases of the stomach*, such as ulcer and cancer, it often proves beneficial. It not only eases the pain, but frequently stops the attendant *vomiting*. *Palpitation* depending upon indigestion is often relieved by this remedy. It is best administered with gentian and soda, as in gentian and soda mixture (Pr. 14).

The tormenting *itching* of nettle-rash and other skin diseases is often relieved by the application of a prussic acid lotion, made by adding thirty drops of the dilute hydrocyanic acid to a pint of water. This lotion is a POISON, and must not be applied to the broken skin, or over any part where there are sores or cuts, for fear of absorption.

Prussic acid acts energetically as a poison through whatever channel it is introduced into the body; whether it be swallowed, or dropped into the eye, or applied to a fresh wound, or inhaled as vapour, its action is exerted with tremendous energy. The rapidity of its action is shown by a case of accidental poisoning which occurred some years ago. An apothecary's lad was sent from the shop to the cellar for some potash. Almost immediately he was heard by his companions to cry out, in a voice of great alarm, "Hartshorn! hartshorn!" On rushing down-stairs they found him reclining on the lower steps grasping the rail, and he had scarcely time to faintly murmur "Prussic acid!" when he expired. On the floor of the cellar was an ounce phial, which had contained prussic acid, but was nearly empty. It is supposed that the unfortunate youth, being ignorant of the active properties of the drug, had taken it out of curiosity, and from the state of the articles in the cellar it was evident that, alarmed at its instantaneous operation, he had tried to get at the ammonia or hartshorn, which he knew to be the antidote, but was overpowered by the tremendous activity of the poison, even before he had had time to undo the coverings of the bottle.

If the patient survive half an hour he is usually safe.

Fortunately, prussic acid is not a cumulative poison—that is, the continued use of small doses frequently repeated is not believed to possess that property recognised

in some medicines of accumulating in the body, and then suddenly breaking out with dangerous or fatal violence.

TREATMENT OF POISONING BY PRUSSIC ACID.—*If seen before the symptoms come on.*—1. Give two tea-spoonfuls of blue vitriol and a tea-spoonful of tincture of steel in a tumbler of water. 2. Give an emetic of mustard and water, or sulphate of zinc (a tea-spoonful in water), or ipecacuanha wine (two table-spoonfuls in water). *If the symptoms have come on.*—3. Give stimulants in large quantities—brandy and water, ammonia, hartshorn, sal-volatile, or chloric ether. If the patient cannot swallow, inject them into the bowel. 4. Strong smelling salts held under the nose may be useful, or bleaching powder (chloride of lime) to which vinegar has been added. 5. Dash cold water and warm water alternately over head and chest. 6. Keep up artificial breathing, as you would in drowning. 7. Above all, be quick—*the best remedy is the one that is at hand.*

Unfortunately, from the rapidity of the action of this poison, it is rarely possible to resort to any treatment quickly enough for success, and even when taken in time the dose swallowed is often so large as not to be counteracted by any remedy. Prussic acid is readily detected in the dead body, not only from its odour, but also from the delicacy of the chemical tests employed for this purpose.

The leaves of the common cherry-laurel (*Prunus lauro-cerasus*) owe their activity to the prussic acid they contain. This well-known plant is a hardy ever-green shrub or small tree, extensively used in gardens and shrubberies for ornamental purposes. It produces early in May elegant spikes of odorous white flowers. The laurel water made by distillation is a dangerous poison, and is so variable in its strength that it is unsuited for administration as a medicinal agent. Several fatal cases have occurred from its injudicious use.

The essential oil of bitter almonds also owes its taste and properties to the presence of prussic acid. It is very variable in strength, but is usually about four times as strong as the officinal prussic acid. It would be considered too powerful and dangerous a preparation to use in medicine, but we nevertheless trust it freely in the hands of our cooks to proportion the dose they consider requisite for flavouring pastry, blanc-mange, &c. The so-called “almond flavour,” “spirit of almonds,” or “essence of peach kernels,” is a mixture of one part of the essential oil with seven of spirit, and even this is often nearly equal in strength to prussic acid. It is sold entirely without restriction, and is so readily procurable that it has recently become quite a favourite agent for suicidal purposes. In five years there were thirty-one registered deaths from oil of bitter almonds, a striking testimony to its popularity. It is only the bitter almond which yields this active principle, the sweet variety being odourless and free from prussic acid. It may be mentioned in this place that the sweet almond contains a large proportion of oil which, from being purer and less rancid than olive oil, is largely used in perfumery and in the composition of nostrums for the hair. The far-famed “Macassar oil” is said to consist of oil of almonds, coloured red with alkanet-root, and scented with oil of cassia.

PULSATILLA.

The pulsatilla (*Pulsatilla nigricans*), or meadow anemone (*Anemone pratensis*), is a plant which flourishes abundantly on the Continent. By the older writers it was known as the "wind floure," not from any efficacy in the treatment of flatulence, but because it nearly always grows in exposed situations, where it is perpetually agitated by the air. It usually flowers in May, and a second time in August or September.

Pulsatilla appears to have a special affinity for the mucous membranes. It is useful in many forms of dyspepsia or *indigestion*. It is given when the tongue is thickly coated with a rough fur, and when there is nausea with little vomiting, and an absence of much pain. It will often act beneficially in indigestion caused by fat or rich food, although the most rational treatment is to get rid of the offending substance by means of an emetic. In dyspepsia pulsatilla exerts a greater influence over heartburn than over water-brash.

Pulsatilla does very well in *discharges from the ears* in children, and often proves curative in *deafness* the result of a cold, or coming on after measles.

In many *diseases of the eyelids* it proves very useful. Thus when they discharge freely, and stick together in the morning, pulsatilla is indicated. This drug may also be used for *styes*, and if given early will often arrest their progress.

Pulsatilla is a drug which is especially adapted for women, and in many of their complaints may be implicitly trusted. Thus it is given in *scanty or suppressed menstruation*, whites, &c.

Subacute *rheumatism*, occurring in young delicate people, often yields to this remedy, especially when the knees, ankles, or small joints of the hands and feet are affected. It is also frequently employed in *rheumatic gout*, being almost curative in the acute forms, and very useful in the chronic.

The whole plant is used in the preparation of the tincture of pulsatilla, the strength of which is one in ten. It is conveniently given in the form of the mixture (Pr. 43), a tea-spoonful every ten minutes for the first hour, and subsequently hourly. In chronic complaints half a table-spoonful may be given every three hours.

QUASSIA, CHIRETTA, CUSPARIA, AND CASCARILLA.

The Jamaica quassia (*Picræna excelsa*) is a beautiful, tall, stately tree, somewhat resembling our ash. It is known as the "lofty bitter-wood tree," and it not unfrequently attains a height of one hundred feet, its trunk being straight and tapering, and sending off branches towards the top. The wood is white, but by exposure to the air becomes yellowish. It is imported from Jamaica and the other West India islands in billets of various sizes, which are sometimes a foot in diameter and several feet in length. The smaller pieces are often cut up and sold as quassia chips. The wood has no odour, but an intensely bitter taste. It is said to be fatal to nearly all insects, and it has long been known that the infusion is an excellent fly poison, and that it or the tincture is used in the preparation of

some of the French fly-papers. Insects never trouble cabinet-work made from this wood, they, it is to be presumed, not being partial to bitters.

Quassia is a simple bitter, and may be used in the same class of cases as gentian or calumba. The infusion is made by steeping sixty grains of quassia chips in half a pint of cold water for an hour, and then straining. The dose is from two to three table-spoonfuls. When it is given to improve the appetite it, like other bitters, must be given shortly before meals; it is of no use taking it after. Quassia may be given with iron, as they do not turn black when mixed. It is one of the ingredients of the iron and quassia mixture (Pr. 2). Sometimes the infusion is employed in the case of children, as an injection for the destruction of the little thread-worms which so frequently infest the lower bowel. It may succeed when given by the mouth, but the method which we have indicated will be found much more effectual.

Chiretta (*Ophelia chirata*), or bitter plant of the Kirâtas, a mountain tribe in the north of India, has long been esteemed by the Hindoos, and is as universally employed throughout the Bengal Presidency as gentian is in Europe. The entire plant is used medicinally, and is commonly administered in the form of an infusion, prepared by steeping a quarter of an ounce of the plant cut small in half a pint of warm water for half an hour, and then straining. The dose is two table-spoonfuls.

Cusparia (*Galipea cusparia*) is a tree varying much in size, and is a native of South America. Its bark is known as "angostura bark." When first imported it was occasionally mixed with the bark of the nux vomica tree, which from that circumstance is often called "false angostura." The marks of distinction between the two barks were soon recognised, but not before several deaths had occurred from the unfortunate accident. There is little danger of the mistake being repeated, but should there be any doubt on the subject it will be at once removed by chewing a fragment, for cusparia bark has a disagreeably aromatic flavour, whilst that of the nux vomica has a pure and intensely bitter taste. The infusion of cusparia is made by steeping half an ounce of the bark in coarse powder in half a pint of hot water for two hours, and then straining. The dose is two table-spoonfuls or more. It differs from chiretta and gentian chiefly in the fact of its being more aromatic.

The cascarilla (*Croton eleutria*) is a member of the Spurgewort family, the natural order which yields us croton and castor oils. It is a shrub or small tree, a native of the Bahamas, and the thickets of Jamaica, and the other West India islands. The bark, the only part used in medicine, is found in quills from two to three inches long, which have a dull brown colour, a warm, bitter taste, and emit a fragrant odour when burned. The powdered bark is the essential ingredient of the fumigating pastilles. It may be given internally in powder in from ten to thirty-grain doses, either with carbonate of soda or in milk. An infusion is made in the proportion of one ounce of bark to half a pint of boiling water, the dose being as usual—two table-spoonfuls. It may be described as a slight stimulating tonic, and it is chiefly employed in *dyspepsia* and other allied complaints.

RHUBARB.

The characters and properties of rhubarb are so well known that it may appear almost superfluous even to enumerate them. The rhubarb used for medicinal purposes is obtained from Thibet and Chinese Tartary. The root is dug up, cleaned, peeled, and cut into pieces, which are bored with a hole through the centre, and are then hung up in the sun to dry. It is imported from Canton, and is brought overland by way of Moscow. This rhubarb is generally known as "Turkey rhubarb," but the true Turkey rhubarb is a thing of the past, for as the rhubarb of the Levant disappeared from trade, that of Russia took not only its place, but its designation. Rhubarb has been cultivated for medicinal purposes at Banbury, in Oxfordshire, for nearly a century.

There are several preparations of rhubarb largely used for their purgative properties. The "infusion of rhubarb" is made by infusing a quarter of an ounce of rhubarb root, in thin slices, in ten fluid ounces of boiling water for an hour, and then straining. The dose of this horrible preparation is about a wine-glassful. "Compound rhubarb pills" are made as follows:—Mix 3 ounces of powdered rhubarb, $2\frac{1}{4}$ ounces of Socotrine aloes in powder, and $1\frac{1}{2}$ ounces each of powdered myrrh and hard soap, with $1\frac{1}{2}$ fluid drachms of oil of peppermint; then add four ounces of treacle, and beat the whole into a uniform mass, after which it is to be divided into pills, each containing about five grains. One or two may be taken for a dose. "Gregory's," or the "compound rhubarb" powder, is a sifted mixture of two ounces of powdered rhubarb root, six ounces of light magnesia, and one ounce of powdered ginger. The dose for a child is from fifteen to twenty grains.

Rhubarb, like many other drugs, has a double action, for in large doses it acts as a purgative, whilst in small doses it is an astringent, and confines the bowels. It is used largely for children, why it is difficult to say, for nine times out of ten it does infinitely more harm than good. The horrors of the Inquisition, the greatest enormities charged even against the vivisectors, sink into insignificance before the horrible cruelties which are constantly inflicted on children by the forcible administration of rhubarb and other equally nauseous drugs. If the bowels are confined, it generally arises from some error in diet, or want of attention to the general principles of health, and the temporary difficulty is often readily removed by giving the child a little fresh fruit, or a few figs.

ROCHELLE SALT.—See EPSOM SALTS, p. 800.

SAL AMMONIAC.

This salt rejoices in a multiplicity of names. In addition to sal ammoniac it is known as chloride of ammonium, muriate of ammonia, and sometimes as hydrochlorate of ammonia. It was well known to the ancients, and its most popular name is said to be derived from Ammonea, a district in Libya, where the oracle of Jupiter Ammon was situated. In Egypt sal ammoniac was and is still obtained by burning camel's dung. In this country, however, it is derived from a more

abundant source, the refuse products formed in the manufacture of coal gas. This "gas liquor" is an offensive, tarry, and strongly ammoniacal liquid. On the addition of hydrochloric acid there is an abundant evolution of a mixture of different gases, and on concentrating the fluid impure crystals of sal ammoniac are obtained. These are separated, and after being roasted to expel the tarry matter, are sublimed in an iron pot furnished with a dome-shaped cover, upon the inner surface of which the salt is deposited in a hard thick cake. It is usually sold in colourless, inodorous, fibrous masses which are pieces of this hemispherical cake. It is tough and extremely difficult to powder, but dissolves readily in either hot or cold water. The rusty-looking stain often noticed on the outer surface of pieces of this salt is derived from the iron pots used in its preparation.

Sal ammoniac is a valuable remedy for all forms of *neuralgia*, more especially for neuralgia of the face. In the treatment of this complaint it is to be reckoned only second to phosphorus, of the beneficial effects of which we have already spoken. In *pain in the muscles of the side*, in *neuralgia of the side*, and the mild forms of *sciatica*, it is extremely useful. In these cases it should always be given in large quantities. Doses of less than half a drachm usually prove useless, and sufferers who have taken it in smaller quantities without avail will do well to give it a second trial under more favourable auspices. The only objection that can be urged against its use is that it is extremely nasty. It may be conveniently taken in the form of the following mixture, every two table-spoonfuls of which contain half a drachm of the salt:—Sal ammoniac half an ounce, chloric ether one and a half tea-spoonfuls, water eight ounces. Two table-spoonfuls should be taken every four hours.

Fortunately, sal ammoniac acts quickly. If the first bottle fails to relieve the pain, it is useless to continue taking it, and it may be concluded that the form of complaint is not one over which the drug will exert any beneficial influence.

In cases of *catarrh*, *chronic bronchitis*, and *winter cough*, the sal ammoniac should be used in the form of fumes, generated in what is called a "Burrough's Chloride of Ammonium Inhaler." This little apparatus can be obtained from almost any chemist, and is most useful.

SALICINE AND THE WILLOW.

As many as sixty-four indigenous species of willow have been recognised by botanists, but of these a few only are useful for medicinal purposes. The "Bedford willow," the "crack willow," and the "common white willow" have already earned their laurels as curative agents. At present we are unable to say positively which of these is the most energetic in its action, but a good practical rule is to select those barks which possess the greatest bitterness combined with astringency. Willow bark, of course, varies somewhat in its characters according to the species from which it is obtained, but it is usually thin and flexible, and readily rolls up into quills. It has a slight odour, but a powerful bitter and astringent taste. It has in many parts of the country long enjoyed a reputation for the cure of ague, and it has been largely used as a substitute for quinine. Its activity depends chiefly on the

presence of a substance known as “salicine.” This salicine may be obtained in little white, silky needles or scales, which are soluble in water, and more so in hot water than in cold. It is now largely employed in cases of *rheumatic fever* or *acute rheumatism*, and very favourable results have followed its administration. It is the remedy upon which the greatest reliance is now placed in the treatment of this terrible disease. It should be given in thirty-grain doses every two hours, or, in bad cases, every hour—smaller doses are of little avail. Pr. 12 should be used. The same method of treatment may be adopted in *ague* when quinine is not procurable. Tea-spoonful doses of this mixture are sometimes used in the treatment of *singing in the ears*. Salicylate of sodium is also very useful.

SAL VOLATILE.

There are probably few medicines more commonly used for slight ailments than sal volatile, or, as it is called in scientific language, aromatic spirit of ammonia. This preparation is not a simple drug, but a mixture or composition of several substances. As probably not one person in fifty who uses this popular preparation has the slightest idea what it is composed of, we will enumerate its ingredients. It is a mixture of carbonate of ammonia, strong solution of ammonia, volatile oil of nutmeg, oil of lemon, rectified spirit, and water. The spirit is by far the largest constituent, and an habitual sal volatile taker is every bit as much a spirit-drinker as the man who “fuddles” himself with gin-and-water over the bar of a public house.

Sal volatile is undoubtedly a valuable diffusible stimulant, but there are unfortunately hundreds of people who employ it with such injudicious frequency, and upon every trivial occasion, that its use has been greatly abused. A physician of the last century narrates the following case illustrative of the ill effects resulting from the long-continued use of one of its constituents, carbonate of ammonia:—

“I had lately under my care,” he observes, “a gentleman of fortune and family, who so habituated himself to the use of vast quantities of volatile salts, that at length he could eat them in a very astonishing manner, as other people eat sugar and carraway seeds. The consequence was that he brought on a hectic fever, vast bleedings from the intestines, nose, and gums; every one of his teeth dropped out, and he could eat nothing solid; he wasted vastly in his flesh, and his muscles became as soft and flabby as those of a new-born infant; and he broke out all over his body in pustules. He was at last persuaded to leave off this pernicious custom; but he had so effectually ruined his constitution that though he rubbed on in a miserable manner for several months, he died, and in the highest degree of wasting. And I am persuaded he would have died much sooner had he not constantly drank very freely of the most fine and generous wines, and daily used large quantities of asses’ milk and anti-scorbutic juices, acidulated with juice of lime.”

Sal volatile and other preparations of ammonia or hartshorn are largely used for *fainting*, *hysteria*, *nervous headache*, *spasms*, *wind*, &c. The dose of the sal volatile is from twenty drops to half a tea-spoonful in a wine-glass of water.

In cases of fainting it is customary to place a bottle of sal volatile or smelling-salts to the nose, for the purpose of assisting the patient’s restoration to consciousness.

In applying preparations containing ammonia to the nostrils of a person in a state of insensibility, we must be careful to avoid using our remedy too energetically. We should always employ it with caution, for if used injudiciously serious or even fatal consequences may ensue. It is a good plan to ascertain by our own sensations the distance at which the bottle should be held from the nose. A few years ago a French physician, who suffered from epileptic fits, was found by his servant in a state of insensibility. The devoted attendant, in order to arouse his master, applied to his nose a handkerchief moistened with ammonia, and continued the application with such unwearied but destructive benevolence, that he not only restored him to consciousness, but excited an attack of bronchitis which proved fatal on the third day.

Ammonia is largely used as an external application in the form of hartshorn and oil. It is employed somewhat indiscriminately for the relief of *rheumatic and neuralgic pains, lumbago, sore throat, sprains, bruises, &c.*

Hartshorn and oil.—Solution of ammonia, one fluid ounce; olive oil, three fluid ounces; mix and shake well together. The liniment should be made in a wide-mouthed bottle, as a difficulty is sometimes experienced in getting it to flow out when the neck is narrow.

SANTONINE.—See FERN ROOT, SANTONINE, &c., p. 801.

SARSAPARILLA.

Sarsaparilla was at one time regarded almost as a “cure-all,” and administered in almost all chronic diseases. As a proof of its efficacy, it was stated by its advocates that patients who commenced taking it often continued to do so for months or years. This we should regard rather as a proof that it was inert, for if it were possessed of active properties it would surely either have killed or cured them long before. The fact is that sarsaparilla was seldom given alone, but was used as a vehicle for the administration of mercury, iodide of potassium, and other powerful and efficient drugs, so that it often obtained credit which it by no means deserved. We believe that sarsaparilla itself is utterly without effect upon the economy, and that its reputation as a “blood purifier,” whatever that may mean, is all rubbish. There is one thing to be said in its favour—if it does no good, it can do no harm. If there is any one who still retains a latent belief in its virtues, he may indulge himself with perfect safety, with the full assurance that he will not suffer in any way, unless it be in pocket. The decoction of sarsaparilla is made by steeping two and a half ounces of sarsaparilla cut into small pieces in a pint and a half of boiling water, and gradually evaporating it down to a pint. The dose is anything under a bucketful.

SENEGA AND SQUILLS.

These drugs are employed chiefly to loosen the phlegm in cases of bronchitis.

Senega is the root of a plant growing abundantly in Kentucky, Ohio, and Tennessee, and was originally used by the Senegaroo Indians as an antidote for the bite of

